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Working Paper 3
PROJECT CONCEPT DRAFT

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" WE ABUSE LAND BECAUSE WE REGARD IT AS A COMMODITY
BELONGING TO US. WHEN WE SEE LAND AS A COMMUNITY
TO WHICH WE BELONG WE MAY BEGIN TO USE IT
WITH LOVE AND RESPECT "

Aldo Leopold

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Introduction

The paper presented to you in the following chapters is a project concept draft which has been written for the Thai authorities and FAO being the executing agent for UNDP to get a better understanding of the complexed multi-purpose integrated development project (THA/79/019) towards rural development. It represents the basis for discussing the continuation of Rural Development through Watershed Management project (THA/79/019), (RDTWM), after the orientation/planning phase, which ends 31 December 1982.

By no means should the contents be understood as binding or complete as the basic information necessary to make various decisions - especially for the detailed operation plans - has not yet been fully put at our disposal, (the socio-economic, soil/land capability classifications; and irrigation surveys for the project area will be published only at the end of August 1982, and studies on technical problems have not yet been commissioned or carried out.). Nevertheless we have attempted to be as complete as possible at this moment in order to allow decision makers of the Royal Thai Government and UNDP/FAO to decide about the concept, organization and programme approach as well as to have an approximate idea about the involvement in terms of personnel and finances.

This project concept draft has been discussed with the District Officer (Nai Amphoe), the Field and Co-Field Director of RDTWM and has received their full backing and support.

It is hoped that the bilateral discussions taking place at FAO's Headquarters, Rome, followed by UNDP Bangkok, during the month of April 1982 will lead to a consensus about the future of RDTWM project and result in a project agreement guaranteeing a smooth transition from the orientation/planning into the implementation phase.

Background

The Royal Thai Government and the United Nations Development Programme (UNDP), with the Food and Agriculture Organization of the United Nations (FAO) as the executing agent, expressed their interest to cooperate in the development of the North-East region of Thailand, as a follow-up of the Mae Sa Integrated Watershed and Forest Land use project (THA/76/001) in the North of the country. The Government has seen the need to apply the experiences gained in the North, to try to tackle the specific problems in the North-East, and has requested the assistance of UNDP in the form of a demonstration project. The demonstration area prepared is located within the large Nam Phong watershed which has a total size of 15,000 km², above the existing dam, (Ubon Ratana Dam), next to Khon Kaen.

Subsequently, the following steps have been undertaken to identify a relevant project site and produce a project document for the first twelve months of work:

- After months of exchange of notes, preceeded by field visits, the original project document THA/79/019/A was agreed upon and signed in September 1980, but the selected area could not be fully developed due to certain restrictions.
- During 1981, Sir Charles Pereira, Watershed Management Consultant to FAO, was asked to identify and select an alternative new project site representing the common problems and characteristics prevailing in the North-East of Thailand, within the Nam Phong drainage basis and draft a new project proposal on its findings. (Watershed problems, Projects and Research needs in Thailand, Mission Report, 1981.).
- On the basis of the draft project proposals, the Royal Forest Department commissioned the Technical Officer in Watershed Management and Conservation, Farming of the Mae Sa project for a brief visit in June 1981, with the task to consult and advise and report on project activities, planned and/or already in progress, while waiting for final approval and signature of the new revised project document under negotiation (Trip Report, Jack Kraayenhagen. June 1981.).

- In the following months the concerned authorities decided to accept the proposal and consequently the official revised project document was signed. (THA/79/019/D). The agreement concerning the UNDP funding beyond the initial one year orientation/planning phase of the RDTWM project will depend upon the preparation of a sound long term implementation programme, including a satisfactory institutional framework. (reference Letter No. THA 1079, 17 November, 1981).
- Based on this agreement the introduction phase of the project, which started already by one of the counterparts (RFD) during June 1981 became officially operational in January 1982 with its one year orientation/planning phase. During the six preceding months of introduction the following activities were to be carried out:
 - recruit and train staff;
 - purchase material and equipment;
 - demarcate the pilot area of some 35,000 ha (210,000 rai);
 - interpret aerial photos of current land use;
 - set up temporary project headquarters and arrange staff accommodation;
 - carry out forest inventory survey of all types of forests within the total project area;
 - introduce small scale forest and range management demonstration activities;
 - expand on agricultural crop improvements in general.

The project authority for the orientation/planning phase is in equal partnership between the Royal Forest Department (RFD) and the Department of Agricultural Extension (DOAE) both of the Ministry of Agriculture and Cooperatives (MOAC), whereas FAO has been chosen as the project executing agent for UNDP in providing technical assistance.

Responding to the terms of reference for the introduction and orientation/planning phase the RDTWM team has carried out so far the following measures:

- recruited staff and consultants for soil/land capability classification -, socio-economic and irrigation surveys;
- obtained, purchased and/or ordered required material and equipment;
- demarcated the project area and carried out aerial photo interpretation on current land use;
- built temporary headquarters of new project site and arranged staff accommodation;
- organized information campaigns in the two Tambons within the project area;
- produced survey design reports for the socio-economic and soil/land capability classification, irrigation and agricultural opportunities surveys to be conducted;
- introduced some small scale demonstration activities;
- almost completed the forest inventory survey of 23,000 ha of forest.

The orientation/planning phase will continue as planned with the implementation of immediate small scale demonstration measures, the preparation of a detailed operation plan and the establishment of a project organization capable of running the RDTWM project in its implementation phase.

This concept paper will form the basis of negotiations regarding the implementation phase of the RDTWM, which should begin in January 1983, but will be by then already four months within the fiscal year 1982/1983 of the Royal Thai Government for which no budget commitments have yet been made by the various Government implementation agencies, as no project operation plan exists.

CHAPTER I

Concept, Strategy and Implementation

1.1 Objectives

The goal of the Rural Development through Watershed Management Project at Phu Wiang (RDTWM) is to devise and implement a strategy to solve, as far as possible the socio-economic and ecological problems of the project site (shown and described on Maps 1 and Figure 1), in the Northeast of Thailand within a reasonable time span and in accordance with the national development policies of the Royal Thai Government (see for reference the National Development Objectives of the Fourth Plan 1979-1981 in Appendix 1.) as well as to develop the experience, skills and expertise required to carry out such development work.

Thus, the main objectives of the RDTWM Project should be:-

A. Development Objectives:

- a) The improvement of the farming economy leading to a higher standard of living;
- b) The conservation, development and efficient utilization of the natural resources, in particular forest, soil and water;
- c) The improvement of social services (especially in the fields of public health and education, as well as the improvement of communication and transport infrastructures;
- d) The introduction of cash crops as well as other cash earning activities in due time;
- e) The reduction of sedimentation flow into the dam across the Nam Phong river.

B. Immediate Objective

- a) to prepare a comprehensive integrated watershed management plan for the development of the Phu Wiang area, as a pilot project for the watershed supplying water to the Nam Phong reservoir.

1.2 Policy Guidelines

Planning and implementation of project measures shall be carried out in correspondence with policy guidelines promoted by the Royal Thai Government.

In particular, the following policy principles shall be applied by the Rural Development through Watershed Management Project:-

1.2.1 People's participation

As it is crucial for a project to have the full cooperation of the target population, the inhabitants of the watershed must be involved in the project activities to a great an extent as possible. Therefore, the RDTWM shall devise methods and procedures to give the population a chance to participate in the planning, decision making, implementation and evaluation of the project activities,

1.2.2 Self reliance

In view of a sustained development process leading to a situation of less dependence of the target population on external inputs, measures characterised by "self help" features shall be developed and given priority in the operation plan.

"We must help them develop themselves, otherwise Thailand cannot develop. If we can solve the problem of the rural poor, we can solve the biggest problem encountered". (Prime Minister Prem Tinsulanonda).

1.2.3 Integration

Complex problems demand complete answers, Thus the Rural Development through Watershed Management project shall use an integrated development approach, featuring:

- a multi-disciplinary approach aiming to integrate various single sector programmes into a multifaceted work programme within which the single elements are compatible and complementary.
- the use of already existing institutions and agencies to carry out the planned measures. (Alternative or new structures shall only be introduced where traditional setups are outdated or cannot serve the project to align its objectives).
- the coordination of all work by a central project operation unit assuring that national, provincial, district and project ideas and plans are carried out in accordance with the accepted objectives and policy guidelines.

1.2.4 Replicability

The Rural Development through Watershed Management project shall attempt to design a project framework which, if it proves to be successful, could represent a prototype for similar projects in the North-East of Thailand. However, operational plans, specific inputs, personnel requirements, funding, etc. are project specific.

1.2.5 Rolling planning and continuous evaluation

The method of rolling planning and continuous evaluation as depicted in Figure 2. will permit the RDTWM project to adjust to the changes in the project area. The adjustments necessary might influence every aspect of the project from objectives to programme details and personnel requirements to finances. Only if such a dynamic project implementation system is applied can a long term programme keep its relevance and further the target population's move towards reaching the goals of the project.

1.2.6 Training

The implementation of measures shall wherever possible be combined with training activities in order to assure transfer of know-how to the participants in the development process. Target groups for training activities shall be

- target population;
- project personnel;
- civil servants and technicians working in related fields.

1.3 Strategy and Implementation

1.3.1 Problem statement and justification

Out of Thailand's total population of 47 million, one third of them inhabit the North Eastern Region of the country. While the other parts have been variously endowed with valuable resources (teak in the North, rubber and tin in the South, low-land rice in the centre), no such resource exists in the Northeast. As a result the region is the poorest in Thailand.

Increasing population pressure to acquire land, coupled with commercial pressure of wood have resulted in encroachment of forest land for agricultural production and illegal felling of timber. Deforestation by slash-and-burn

practices have already destroyed great national wealth, since much of the timber thus destroyed would be saleable if properly harvested. Nowhere is the result of this trend felt more acutely than in the watershed areas in the North Eastern Region. Soil erosion, the siltation of dams and erratic water regimes all have a very detrimental effect on agriculture in the downstream areas. Since irrigation opportunities are limited in the North-East, increasing the intensity of land use will involve primarily this transformation from shifting to stable dry-land agriculture. Average yields in the North-East have been declining as a result of expansion into upland areas, but even within the uplands, yields have been falling because of the decreasing fallows period caused by rising population pressure. This trend can be arrested only through the use of appropriate cropping patterns and fertilizer, in combination with soil/conservation measures, and water, to reduce erosion and maintain soil fertility.

In the absence of a concerted development effort, the prospects for the vast majority of farmers in the North-East are bleak. Those in the limited irrigated areas should fare reasonably well by extending the area under double cropping and even moving into triple cropping. However those in rainfed areas will face increasing pressure to break up their holdings, and declining rice yields, together with limited opportunities for diversification, will contribute to the reduction in output. Some will migrate, but they will find few jobs outside of agriculture. As a group, these farmers could find their incomes delining in real terms.

Since the construction of the Nam Phong Dam (Ubol Ratana) in 1965, the population within the drainage basin has been increased by 200 per cent to roughly 1.7 million. The forest cover has been eliminated at a very high rate, estimated 75 per cent of the 1965 forest, to make place for the ever increasing demand for shifting cultivation areas. If present trend continues no forest will be found in 10 to 15 years.

It is therefore necessary to take steps to reverse the deterioration of the watersheds through improved management, better land use i.e. assigning to agriculture and to forestry their proper areas, through agri-silvicultural practices and by reforestation of denuded areas. At the same time, programmes must be developed which take into account the present population, providing them with better alternatives for food production, employment and improving their general welfare.

1.3.2 Strategy component

In order to address the complex socio-economic and ecological problems in the North-East of Thailand, the project strategy must contain those elements which - over a long time - will influence the root of the problems in the desired way. The formerly used mono-aspect programmes implemented in an uncoordinated manner are no longer valid. Therefore, a strategy of integrated rural development, or, as it is also called if the project area represent the geographical unit of a watershed, a strategy of integrated watershed development is required. However the content of such an integrated approach differs from project to project because its main goal is to respond to the needs of each area in a contextualised but integrated way.

The main element of the integrated rural development approach of the Rural Development through Watershed Management project shall be the following:-

a) Agriculture

The goal of the project is to improve the agricultural use of the available, cultivable land as well as to attempt to convince the farmer still using shifting or swidden cultivation to accept gradually new methods leading to a stable form of agriculture. The measures to be carried out will focus on the following programme aspects:-

- build up a suitable extension system;
- improve land use practices;
- improve the cropping intensify and productivity;
- reduce soil losses by introducing and promoting conservation farming methods;
- promote crop diversification (including the introduction of cash crops wherever possible and reasonable);
- promote mushroom, beekeeping, silk and inland fisheries activities etc., to diversify labour input and increase farm income;
- improve horticulture and vegetable growing;
- address problems of post-harvested storage losses;
- train farmers and extension personnel.

b) Forest

The watersheds in the North-East of Thailand are presently depleted of their forest with an accelerated speed.^{1/} The consequences of the deforestation (within 10 to 15 years, all forest cover is gone at the present speed of deforestation) will be serious for both the upland and lowland. To arrest and improve the present situation is a major element of the project.

The forestry programme shall contain the following elements:

- reforestation;
- creation of village woodlots for fuelwood;
- forest management;
- establishment of nurseries;
- forest protection in the broadest sense;
- training of forest personnel and villagers.

c) Livestock

In many places the livestock population plays an important role as work animals and also as provider of protein for the population. It will be important to keep the total number of livestock ^{at} a reasonable level and to diversify the present stock.

To achieve these aims, the project shall:

- help to build up a suitable extension system including veterinary services;
- improve the quality of livestock by cross-breeding;
- promote small livestock (chickens, pigs, ducks, rabbits, etc.)
- launch programmes to assure the feeder basis for the animals;
- look into and improve the marketing of animal products;
- train farmers and extension agents.

^{1/} The potential for wood energy in Thailand, written by G. Burnard & S. Ratasub, June 1980, publishes a drop from 7.1 million hectares of forest area to 2.8 million hectares over the period 1961 -77, with an average annual rate of 500,000 hectares over the last 4 years.

d) Water Management

The scarcity of water during the dry season is one of the major constraints for the increase of agricultural productivity. However, in some areas possibilities exist to use that scarce resource more efficiently. The RDIWM project shall:

- support activities to irrigate as much land as possible;
- improve already existing irrigation system where necessary;
- train farmers/villagers how to maintain and manage irrigation systems;
- support stream correction and stabilization measures as part of the conservation work;
- improve and promote water storage for inland fish-culture.

e) Health

The availability of health service in the villages is at present quite minimal and consequently many people are in poor physical health. It shall be the aim of the RDIWM project in providing adequate services in this project area to:

- support the improvement for the necessary health stations;
- introduce and promote primary health care;
- subsidize medical supplies;
- support strongly family planning activities;
- train villagers as village health volunteers;
- launch immunization campaigns;
- improve domestic water supply systems;
- carry out health education campaigns.

f) Education

One of these major preconditions for progress is the existence of an educated population, both women and men. Therefore, the RDIWM project shall stress the educational component of its programme by carrying out the following activities in the field of education:

- improve by various means the existing primary school system;
- start non-formal and literacy programmes, especially involving women;

- provide fellowships for promising students to make it possible for them to further their education;
- support programmes to train existing teachers for evening classes for illiterate adults.

g) Infra-structures

In general the road network in the remote areas is either insufficient in terms of accessibility or the existing roads are badly constructed and aligned, creating erosion and high costs of maintenance. The project in an attempt to help alleviate this situation shall:

- improve the existing road and track network;
- prepare feasibility studies for new roads;
- construct or support the construction of new road;
- train villagers and workers in the maintenance of existing roads and tracks;
- improve and expand on electricity supplies.

h) Non-agricultural employment

The increasing number of people in the North-East present a formidable problem of absorption for the present farming economy. Ways and means must be found to earn income outside the agricultural process. In view of this situation the RDTWM project shall:

- undertake studies with the goal of finding cash earning activities besides the present agricultural occupation, like, i.e. mushroom, silk and weaving, home industries, beekeeping, and village scale forest industries;
- support measures deemed appropriate to create non-agricultural employment.

The strategy framework presented above represent a catalogue of possible measures which might or might not be applied according to the specific situation encountered. Furthermore, it is well possible that under certain circumstances other elements will be added if necessary for the achievement of the project aims.

1.3.3 Planning of Measures

The planning procedure of the RDTWM project is shown in Figure 3.

The plan of operation shall contain three main categories of activities implemented for the benefit (short, intermediate and long term) of the target group. These are programmes aiming at:

- individuals and/or households;
- a village and its immediate surroundings;
- the whole project area (watershed).

All the measures shall be based on the felt needs to fit the project's plan within the district or Amphoe plan of the watershed inhabitants and on considerations of regions' concern (project area and beyond)^{1/}. The second principle will be used especially when planning measures in the fields of transport, communication and ecology.

The guiding principle for the planning shall be in accordance with the objectives - to plan for development by participation aimed at self reliance and conservation of natural resources.

1.3.4 Modus Operandi for implementation

The implementation of the selected and approved operation work plan shall be carried out in close cooperation with the concerned Ministries and Departments of the Royal Thai Government or other institutions involved in rural development, e.g. universities, other projects, etc. It is also possible that for certain activities the private sector could participate. Figure 4 shows the connection between measures and possible implementing bodies.

Furthermore, the RDTWM project's operation unit shall support the implementation by preparing the target population via a number of "Muban Contact Persons", (The task, composition, etc. of the Muban Contact Persons are spelled out in Chapter 2, Section 2.3.4 and Appendix 2).

All heavy earthmovement requirements for the planned engineering components will be carried by the heavy equipment units of the engineering section of RDTWM project's operation unit, (For details on composition see Appendix 10). Also some measures will be implemented directly by the RDTWM project in small scale demonstrations and some training activities.

^{1/} Present felt needs in the project area is on water for irrigation and households, followed by roads.

Map 1
Rural Development through Watershed Management
in the Nam Phong Basin
in the North-Eastern Thailand.



Thailand

 Project Area (Phu Wiang)

 Nam Phong Watershed

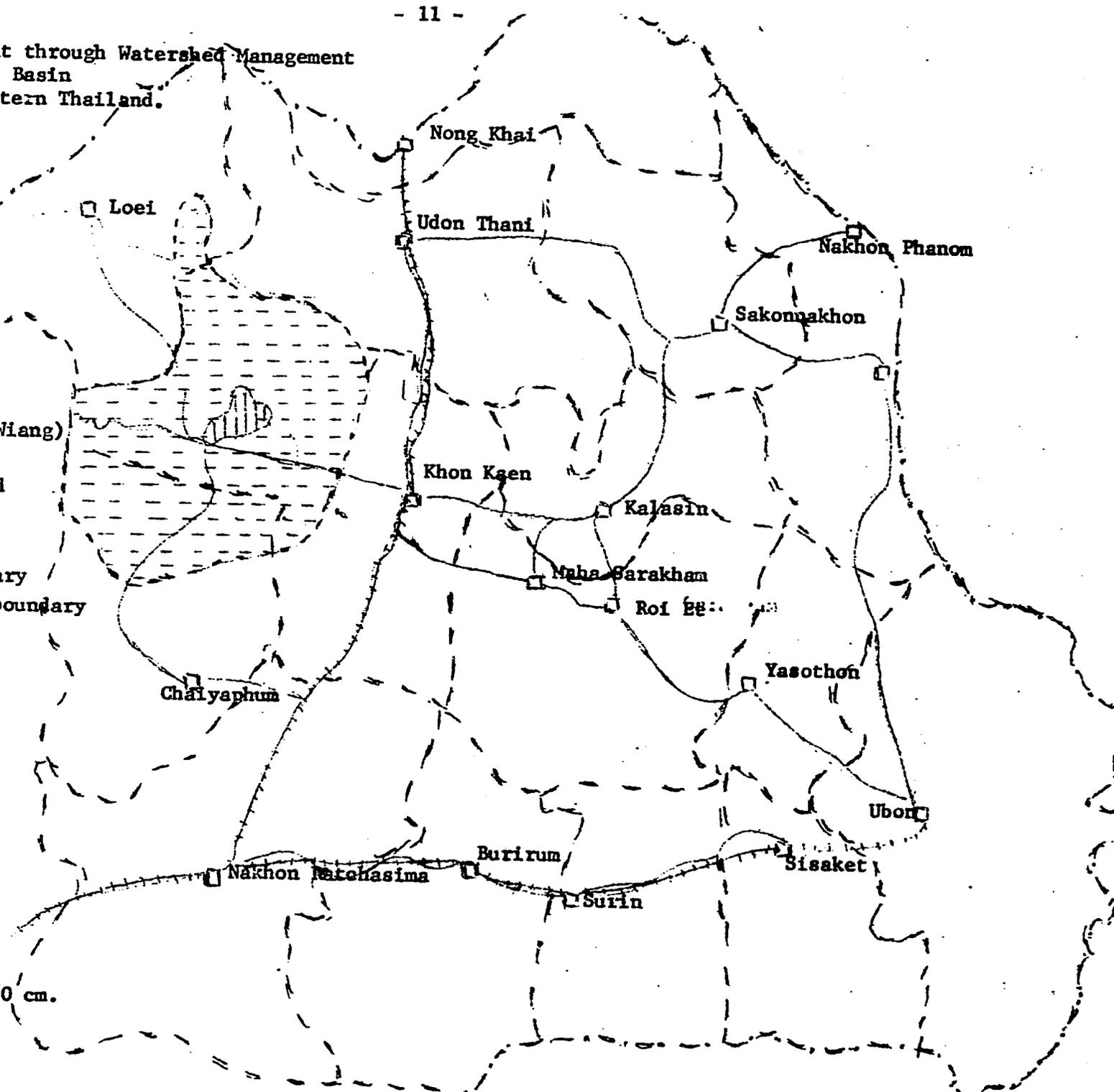
 Province

 Provincial boundary

 International boundary

 Rail road

 Main road



Scale 1:3,100,000

0 30 60 90 120 cm.

Figure 1

Facts about Project Area (Watershed)

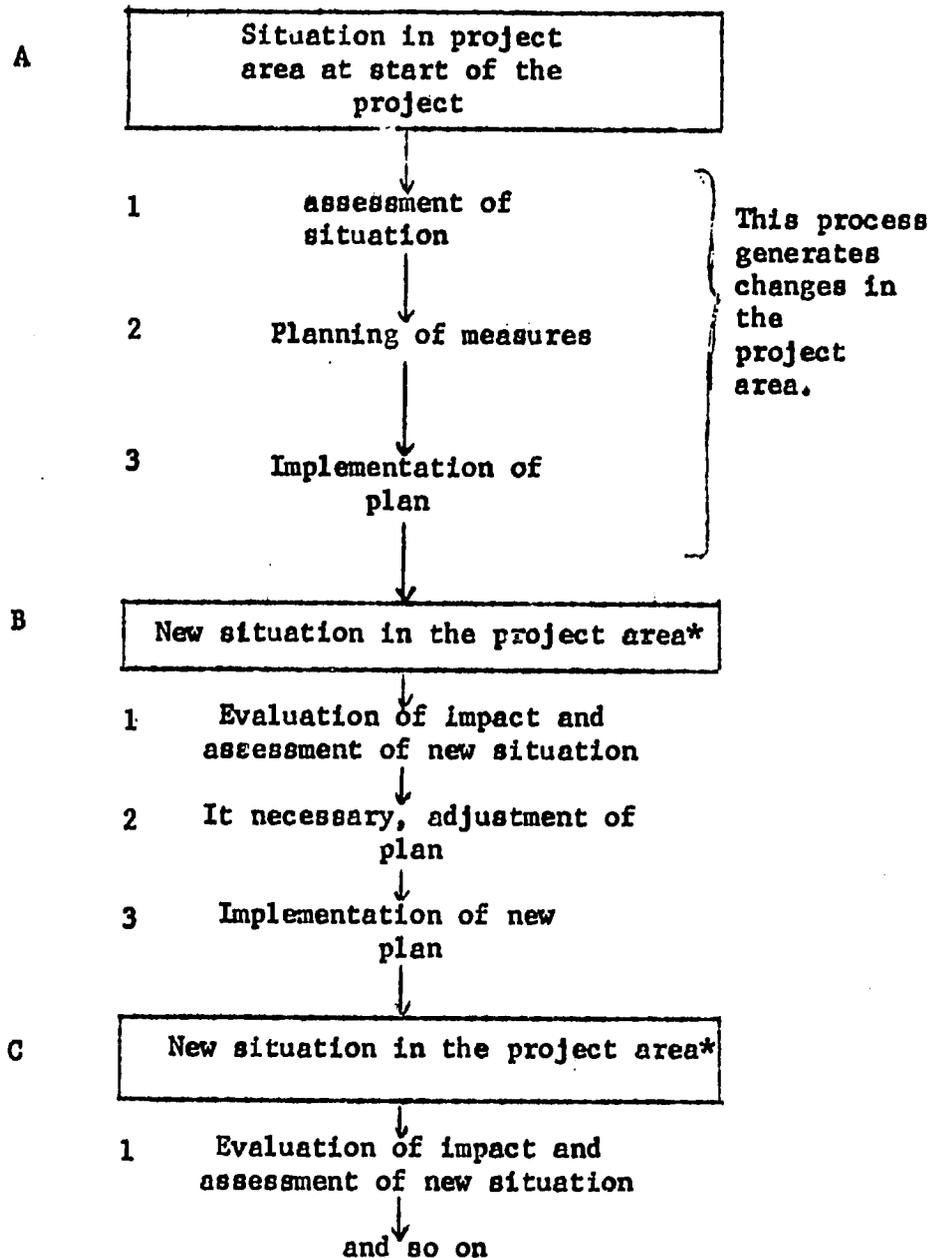
| | |
|--|--|
| Name | Rural Development through Watershed Management in the Nam Phong Basin. |
| Location: | Fhu Wiang (Khon Kaen) District: Fhu Wiang Province: Khon Kaen |
| Project area km² | 318 |
| Population No. | 15,000 (Thai National) |
| Tambon No. | 2 (Kow Noi and Mai Muang) |
| Households No. | 3,000 ^{1/} |
| Villages No. (Mubans) | 28 |
| Density No/km² | 47 (170)^{2/} |
| Partners: (Orientation Phase) | Royal Forest Department (Watershed Management Division), Department of Agricultural Extension, United Nations Development Programme, Food and Agriculture Organization of the UN. |

1/ Population and household figures to be adjusted on the basis of the findings of the socio-economic survey results.

2/ More than 90 percent of the population is engaged in agricultural activities and are residing in the lower parts of the watershed, which occupies about 88 km².

Figure 2

Process of Rolling Planning and Continuous Evaluation



* Besides the programme impact also internal and non-project external factors generate changes. Such changes cannot be controlled but are measured and taken into consideration both in assessment and the development of adjusted plans.

Figure 3

Planning Procedure RDTWM Project

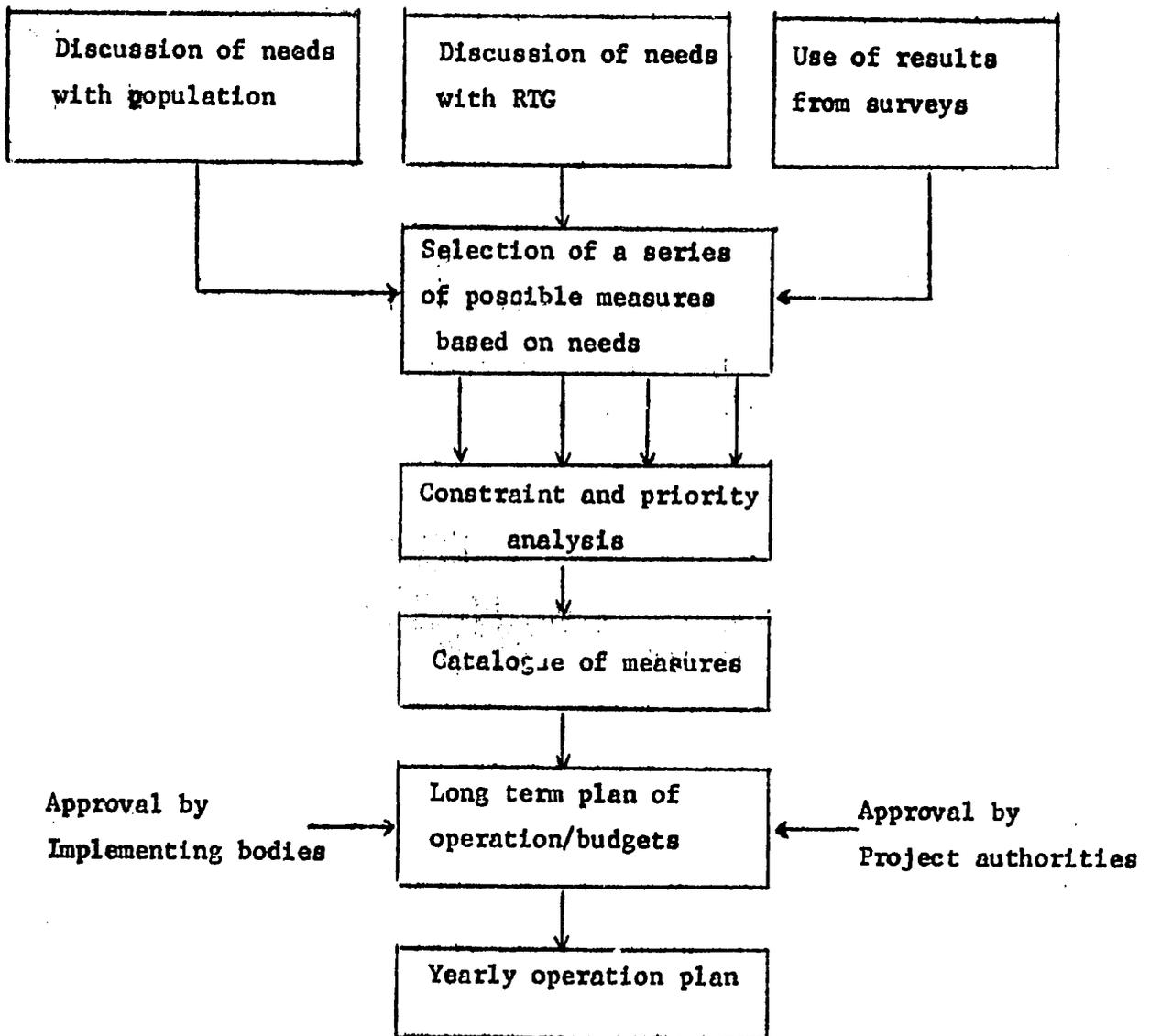


Figure 4

Possible Implementation Partners

The proposed measures shall be carried out by various RTG agencies organizations and/or even the private sector. With each of those implementing bodies a contract shall be concluded describing the extent of cooperation.

| Programme aspects | Possible Implementating Partners |
|-------------------|--|
| Forest | Royal Forest Department, Division of Watershed Management, North-Eastern Regional Forest Office |
| Agriculture | Department of Agricultural Extension, North-Eastern Regional Agricultural Extension Office, Department of Public Welfare. |
| Livestock | Department of Livestock Development, Department of Agricultural Extension, Department of Public Welfare. |
| Water Management | Royal Irrigation Department, Small Project Construction Division, Department of Agricultural Extension, Department of Accelerated Rural Development, Khon Kaen University, Ministry of Public Health. |
| Health | Ministry of Public Health, Royal Health Division, Provincial and District Health Office, Institute of Health Research, Khon Kaen University. |
| Education | Department of Non-Formal Education, Department of Public Welfare, Office of the National Primary Education Committee, Ministry of Interior, Department of Community Development, Provincial and District Education Office, North-Eastern Teacher Training College. |
| Infrastructures | Provincial and District Administration, Khon Kaen University. |

CHAPTER 2

Organization and Management

The organizational setup of the Rural Development through Watershed Management project is presented in Figure 5, 6 and 7. In accordance with the policy guidelines the institutional setting assures people's participation and assures horizontal cooperation and coordination.

2.1 National Level

The Ministry of Agriculture and Cooperatives (MOAC), through its Under-Secretary (U.S.), will be responsible for the overall coordination of the project. MOAC will be the project authority and supervise the project through the Project Director appointed by the Royal Forest Department (RFD) and the Project Co-Director appointed by the Department of Agricultural Extension (DOAE). The already formed Rural Development Committee, comprising representatives of the Ministers of Agriculture and Cooperatives, Public Health, Education and Interior, chaired by the Prime Minister, shall be responsible for all decisions on matters of policy and principles (RDC).

2.2 Regional Level

The regional offices of Royal Forest Department (NERFD) and Department of Agricultural Extension (NE-DOAE) in close consultation with the North-Eastern Agricultural Development Centre (NEADC) shall assist the project in the matters of coordination and execution of project activities.

2.3 District/Project Level

- 2.3.1 The RDTWM project operation unit will be located at Phu Wiang. The project Field and Co-Field Directors, together with the Chief Technical Adviser will manage and supervise the overall operations (for job description see Appendix 3). The RDTWM project operation unit will be responsible to the Project Director and Co-Director appointed by the Royal Forest Department and Department of Agricultural Extension respectively.

2.3.2 RDTWM Advisory Committee (RDTWM-AC)

A small advisory committee shall be formed in order to provide the project with advise concerning the work, both in view to planning and implementation. The advisory committee shall be chaired by the District Officer (Nai Amphoe) and consist of about seven members who are well informed about local rural and watershed development problems in the project area and the functioning of the Royal Thai Government administration. Four members will be from the district administration forest, agricultural extension, rural development -, education and/or health office and three local members will be appointed by the Under-Secretary of the Ministry of Agriculture and Cooperatives for a duration of one year at a time.

2.3.3 RDTWM Sections

The six RDTWM sections (see Figure 6) shall deal with the following aspects of the project work:

| Section | Responsible Officer(s) |
|---|--|
| 1. Planning | Chief Technical Adviser and Project Field Director |
| 2. Programme implementation | Project Field Director and Field Coordinator |
| 3. Training/Extension | Project Co-Field Director and Field Supervisor |
| 4. Engineering | Agricultural Irrigation Engineer |
| 5. Monitoring/Evaluation, Data Collection | Field Evaluation Officer |
| 6. Administration | Administrative Officer |

(For the job description see Appendix 3)

The overall management will be in joined hands of the Project Field Director and Chief Technical Adviser.

2.3.4 Muban Contact Persons (MCP)

The RDTWM operation unit shall employ, train and run an adequate number of local recruited Muban contact persons for the first three years (approximately a minimum of twenty eight persons will be necessary). The task of these local Muban Contact Persons is to help the villagers (farmers) to get organised to develop their villages or Mubans and fields, as well as to be a vital link to the project operation unit. The MCP shall be appropriately trained and supported by the RDTWM. The MCP will be grouped into teams of three in each and will rotate in a group between their respective Mubans, the contact team shall each consist of at least one woman. During the orientation/planning phase of the project, the MCP selected* by the villagers themselves, shall initially support RDTWM in the socio-economic on a part-time basis. Section 3 of the RDTWM project operation unit shall be responsible for the training and work of the Muban Contact Persons. (For cost of the MCP see Appendix 2).

2.3.5 Line Agencies

In order to carry out the programme of RDTWM, the project will need the assistance of line agencies and other institutions. These line agencies and institutions will be fully responsible for the activities of RDTWM in their field. The RDTWM, through the UNDP/FAO, will support the cooperation bodies with technical assistance in implementation, material and/or equipment, and even with contract-work during the first part of 1983.**

The extent of the cooperation shall be spelled out in subcontracts or letters of cooperation. Each line agency or institution shall appointed a liaison officer to work closely with the RDTWM.

2.3.6 RDTWM Coordination Meeting

The RDTWM Coordination Meeting shall be convened by the Project Field Director at least six times per annum or on demand of any member:

* The selection is based on education, age, time availability and trust, together with the past experience while working for DOAE as contact farmers.

** The line agencies of RTG are requested to submit final budget requirements at least ten (10) months before the beginning of the new fiscal year which starts in October, making planning and implementation of proposed activities only possible during the later part of 1983.

The functions of the RDTWM Coordination Meeting are:-

- to coordinate all activities in the project area;
- to ensure regular contact of all concerned line agencies and institutions carrying out implementation work;
- to discuss problems, plans, etc. and decide on implementation methods, procedures, etc. of the RDTWM activities;
- to plan and evaluate RDTWM activities.

The membership shall consist of:

- RDTWM Project Field Director and Chief Technical Adviser;
- RDTWM Section Heads;
- Liaison Officers of the line agencies and institutions concerned.

2.3.7 RDTWM Staff Meeting

The staff meeting shall be convened by the Project Director and held monthly in order to run the management unit smoothly. The Project Director, Chief Technical Adviser and all Section/^{Heads} shall participate

2.3.8 RDTWM administrative meeting

MOAC shall meet with the RDTWM operation unit in an administrative meeting whenever need arises. The meeting shall be called by either the Project Director (RFD) or Project Co-Director (DOAE), or the RDTWM Project Field or Co-Field Director, or UNDP/FAO.

Participants shall be:

- Project Director (RFD)
- Project Co-Director (DOAE)
- Liaison/Planning Officer of RFD for RDTWM
- Liaison (Planning Officer of DOAE for RDTWM
- Project Field Director (RFD)
- Project Co-Field Director (DOAE)
- Chief Technical Adviser
- Representative of UNDP/FAO
- Other members according to need on invitation.

2.3.9 RDTWM District Committee

The RDTWM District Committee shall meet once a year in order to:

- evaluate the project work of the past year;
- pass the budget and the work programme for the coming fiscal year.

The membership shall consist of:

- Chief of District (Chairman) (Nai Amphoe)
- RDTWM Project Field Director (Secretary)
- RDTWM Project Field Co-Director (Asst. Secretary)
- RDTWM Chief Technical Adviser
- RDTWM Section Heads
- Liaison officers from implementing bodies
- Technical Officers of the District.

2.3.10 Village Committee

Village Committees shall be formed by local people for the planning, implementation and evaluation of development measures of the RDTWM.

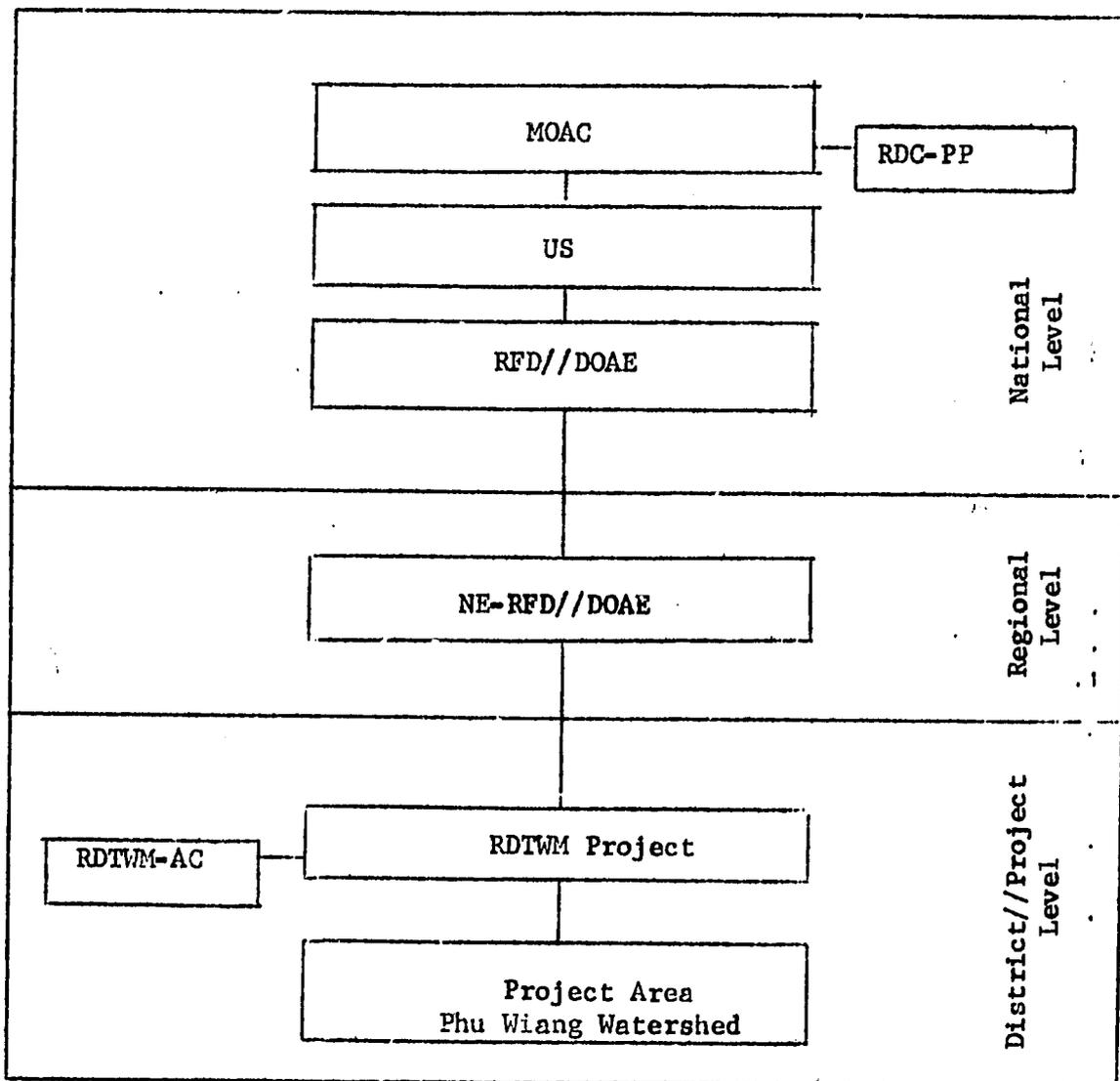
The membership of the village Committee shall be decided upon by the concerned people. RDTWM personnel, including implementing agencies and institutions, shall only have advisory functions.

2.3.11 Household Meeting

Household meetings shall be encouraged to hold occasional meetings with the village contact persons, field technicians from line agencies and staff from line agencies and staff from the RDTWM operation unit in order to exchange experience and opinions. This form on the rice-root level shall permit all project staff to keep in close touch with day to day realities and provides input for planning.

Figure 5

Rural Development through Watershed Management
Organigramme



- MOAC = Ministry of Agriculture and Cooperatives
- RDC-PP = Rural Development Committee for Policy and Principles
- US = Under-Secretary of MOAC
- RFD = Royal Forest Department
- DOAE = Department of Agricultural Extension
- NE-RFD = North-Eastern (Regional) Royal Forest Department
- NE-DOAE = North-Eastern (Regional) Department of Agricultural Extension
- RDTWM = Rural Development through Watershed Management
- RDTWM-AC = Rural Development through Watershed Management Advisory Committee.

**Figure 6. Rural Development through Watershed Management
Project Operation Unit Organization**

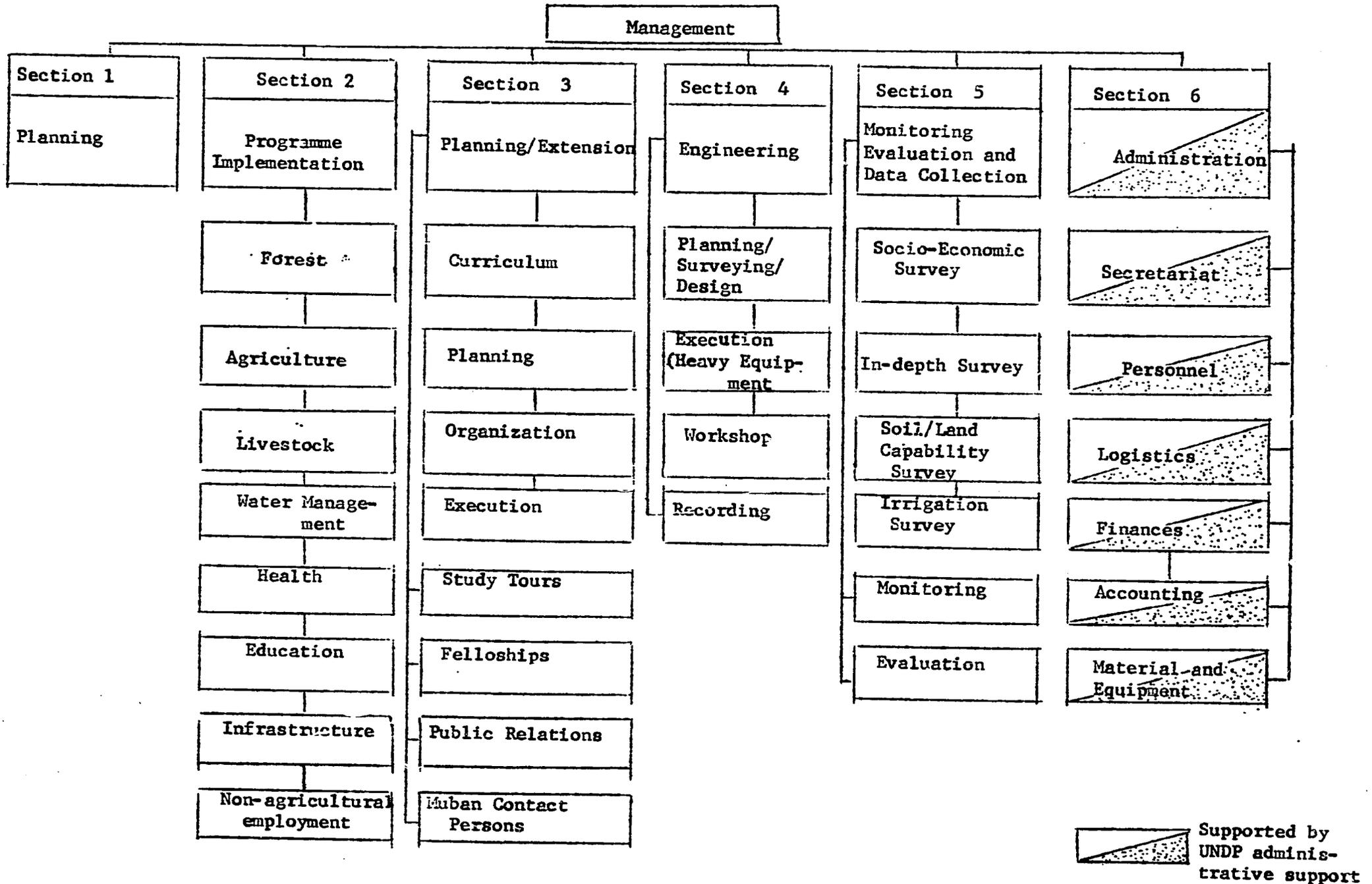
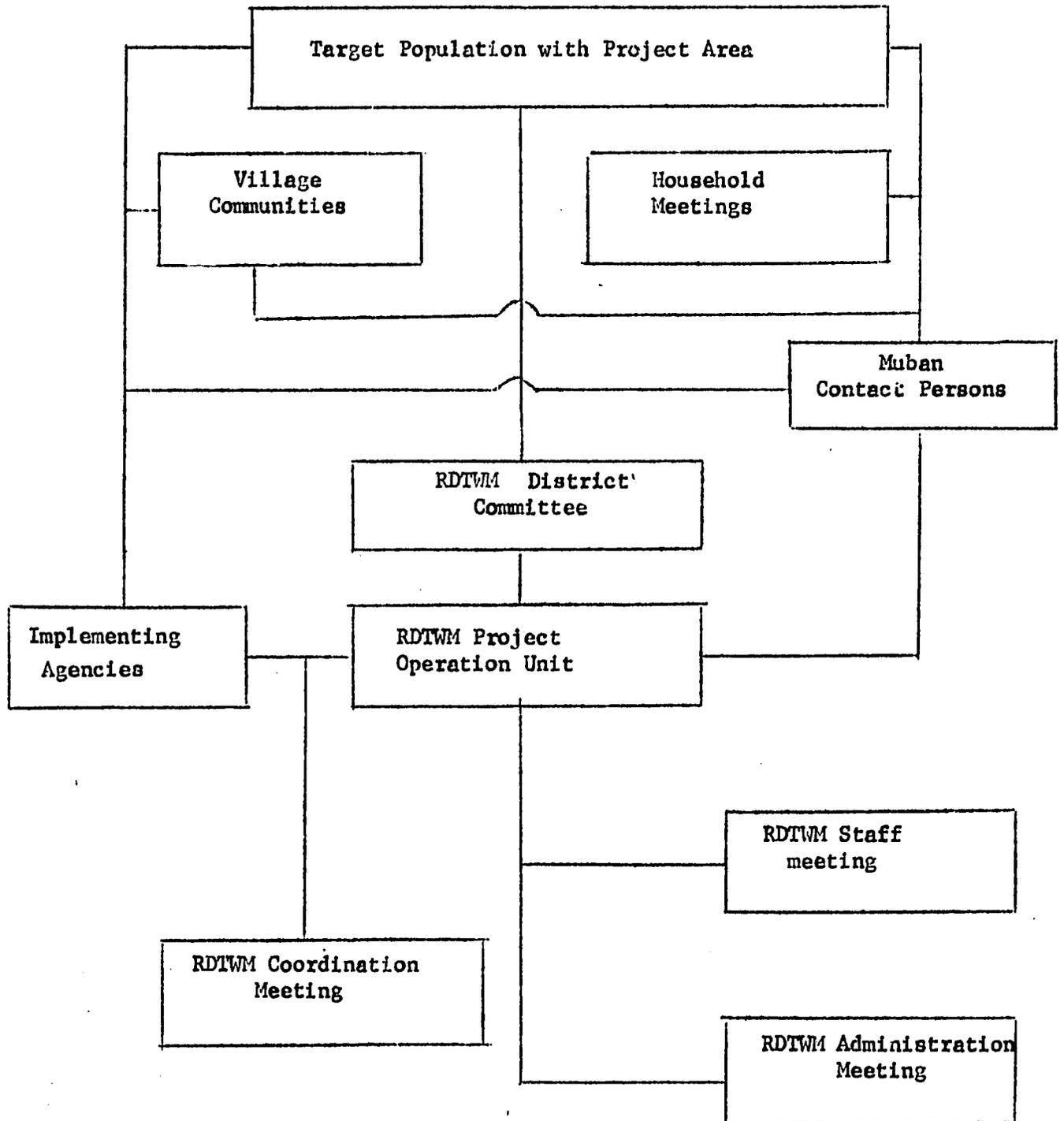


Figure 7

Rural Development through Watershed Management
Operational Organigramme



Chapter 3

Plan of Operation

In this chapter an outline for the plan of operation for the project area (watershed) is presented (see Figure 8). Due to the fact that the project just started (about two months ago) we are not yet in possession of the necessary facts to present a detailed plan for the area. According to the time-table for the orientation (planning) phase, more detailed planning will be completed during the fiscal year, January to December 1982. Therefore, the operation plan shown below is only semi-detailed and serves to give the reader a general impression about the work to be done during the orientation phase and in the first implementation phase. Also, the outline presented shall in no way preclude changes should they become necessary.

3.1 Project Area

The operation plan for Phu Wiang watershed is presented in Figure 8, indicating the activities to be undertaken by the project and planned timing as provided in the Project Document (Section II E and F).* The twelve months of the orientation /planning phase will be highlighted by the implementation of immediate small scale demonstration measures (for details see Appedix 5), the construction of project office and staff buildings and by the commissioning of two short term (part-time) consultancies necessary to elaborate a more detailed operation plan for the first implementation phase lasting five years, to begin in January 1983 (see for reference planned Survey Designs working paper I and II).

The Muban Contact Persons (a minimum total of 28) shall be selected and trained so that they can start their work right at the beginning of the implementation phase (January 1983) in order to prepare the project target population.

At the end of the first implementation phase, an evaluation of the programme shall take place resulting in recommendations about the continuation of the work in Phu Wiang Watershed.

3.2 Project Operation Unit

Besides carrying out the work as described in the Plan of Operation (Section 3.1), the RDTWM operation unit shall undertake the following activities in the fiscal year Jan-Dec. 1982:

* See for more details Appendix 4.

- develop a concept for monitoring and evaluation;
- select, employ and train its own staff;
- procure vehicles, material and equipment;
- expose the RDTWM officers to similar projects by visiting one or more important project in Thailand and by attending seminars combined with field days;
- build up the six sections of the project operation unit;
- set up the implementation structure, e.g. Advisory Committee, District Committee, etc.

Important activities of the orientation/planning phase shall include:

- carrying out seminars about the project work;
- discussions with the RTG agencies concerning the first implementation phase of the project (January 1983 - December 1988)
- preparing the Thai counterpart staff to handle all aspects of the project orientation.

The progress of RDTWM will be closely linked to a well organised and professionally working project operation unit as planning, coordination, monitoring, supervision and evaluation are pivotal aspects of the whole project.

Figure 8

Plan of Operation : Phu Wiang Watershed

End of fifth
5-year plan ↓

| Measures | Years | 1981/82 | 1982/83 | 1983/84 | 1984/85 | 1985/86 | 1986/87 | 1987/88 | 1988/89 |
|----------|---|---------|---------|---------|---------|---------|---------|---------|---------|
| 1 | Demarcation of pilot area (318 km ²) | — | | | | | | | |
| 2 | Forest Inventory Survey | — | | | | | | | |
| 3 | Soil/Land Capability Classification Survey | — | | | | | | | |
| 4 | Irrigation Survey | — | | | | | | | |
| 5 | Socio-Economic Survey | — | | | | | | | |
| 6 | Agricultural home & village Industry Study | — | | | | | | | |
| 7 | Agricultural Opportunity Study | — | | | | | | | |
| 8 | Negotiation for implementation phase with line agencies, etc. | — | | | | | | | |
| 9 | Preparation of full draft for implementation phase | | — | | | | | | |
| 10 | Implementation of small scale demonstrations | — | | | | | | | |
| 11 | Construction of office and staff houses | — | | | | | | | |
| 12 | Implementation of Work Operation Plan | | — | | | | | | |
| 13 | Intermediate Evaluation | | | — | | | | | |
| 14 | Final Evaluation | | | | | | | — | |

↑ Beginning of implementation phase

Chapter 4

COSTS

At this point in time, it is difficult to estimate exactly the expenditures for the coming years. However, in order to have an idea about the range of costs, we have developed a tentative budget (Figure 9 and 10) based on our field observations, limited experience, collected information during the pre-inventory and comparison with similar projects. Nevertheless, we would like to point out that the budget figure are tentative only and shall in no way prejudice the coming planning exercise.

The total budget for the first five years of the implementation amounts to about US\$3.8 million or 87 million Baht. The expenditure per annum per person (approximate total population of 15,000) amount to approximately US\$ 50.00, a figure that is much lower than the ones of the Mae Chaem Watershed Development Project (USAID), the Northern Agricultural Development Project (World Bank) and Thai-German Highland Development Programme (GFZ).

The exchange rate used is 23 Baht = 1 US Dollar.

4.1 Explanations with regard to the RDTWM Tentative Budget 1983-1987

4.1.1 Personnel

The personnel costs for RTG do not include expenditure for personnel of line agencies implementing the RDTWM programmes. The staff requirements for the RDTWM operation unit are presented in Appendix 6. It is assumed that apart from the expatriate (Chief Technical Adviser), administrative assistant, local short term (part-time) consultants and local subcontractors (including the Muban Contact Persons), RTG will provide the necessary personnel and pay fully for all their salaries as well as allowances and per diems.

During the various stages of the project, the RDTWM will allocate work under local subcontract for planning, surveys, design work, guiding, activities, monitoring, recording and evaluation, at this stage we can only list how many man/months shall be needed, and for what purpose or activity, being:

4.1.1.1 National Consultants (Figure 9, item 17)

| | <u>Total man-months</u> | <u>Cost in US Dollars</u> |
|--------------------------------------|-------------------------|---------------------------|
| 17-01 Engineering | 7 | 7,000 |
| 17-02 Watershed Management/Economist | 6 | 6,000 |
| 17-03 Training | 6 | 6,000 |
| 17-04 Agronomy | 6 | 6,000 |
| 17-05 Others | 13 | 13,000 |
| Total | 38 | 38,000 |

For terms of reference and time allocations see Appendix 7.

By employing and engaging local specialists as part-time consultants the overall UNDP contribution to the project will be reduced to a minimum. From present recruiting and engagement procedures (socio-economic and soil/land capability classification surveys) it is found that they also have the following additional advantages, being:

- availability
- required qualifications and local experience
- familiar with language, customs, culture, traditions and government administrative and legislative procedures, making a closer field working relationship with villagers, their selective representatives, RDTWM project staff and RTG agencies more effective.

4.1.1.2 Sub-contractors (Figure 9, item 20)

| | <u>Man-months</u> | <u>Cost in US Dollars</u> |
|--|-------------------|---------------------------|
| 20-01 Irrigation Engineering (6 dams, 4 fish ponds) | 130 | 22,000 |
| 20-02 Road construction Engineering (10 kilometers) | 32 | 5,000 |
| 20-03 Drinking Watersupplies (10 pumps) | 40 | 5,000 |
| 20-04 Muban Contact Persons (28 for 3 years) | 1,008 | 96,012 |
| Total for five year period | 1,210 | 128,012 |

See terms of reference Appendix 8.

The engagement of sub-contractors during the beginning of 1983 will enable RDTWM project to succeed smoothly from orientation/planning phase straight into the operation/implementation phase, without having to wait for RTG required budgeting procedures (see Section 2.3.5).

Further UNDP contribution to the project will be provided in:

4.1.2 Training (Figure 9, item 30)

| | |
|-----------------------------|------------|
| - individual fellowships | \$ 130,000 |
| - group training (external) | 90,000 |
| - in-service training | 65,000 |

| | |
|----------------------------|------------|
| Total for five year period | \$ 285,000 |
|----------------------------|------------|

4.1.3 Equipment (Figure 9, item 40)

Since one of the major objectives of the RDTWM project is to provide the unemployed and under-employed with working opportunities in various fields, most of the planned activities within the project, apart from the heavy earthmovement requirement for dam -, fish pond -, and major road construction, will emphasize labour intensive work keeping the equipment and supplies component to the minimum.

4.1.3.1 Expendable equipment

i) supplies to first year's operation
to support the different engineering
components \$ 65,000

ii) supplies for experimenting, demonstra-
tion, office, camping, simple tools
and spare parts \$ 20,000

| | |
|----------------------------|-----------|
| Total for five year period | \$ 85,000 |
|----------------------------|-----------|

(See list of expendable equipment and supplies (UNDP) Appendix 9.

4.1.3.2 Non-Expendable Equipment

The equipment listed in Appendix 10 is the minimum requirement necessary to implement the total work programme envisaged, as present heavy equipment of the various RTG agencies is either broken down or in a very poor shape.

The project management is convinced that the purchasing of the required equipment is fully justified, considering the prices paid to local contractors and their work performances on previously completed jobs.

~~The non-expendable equipment component~~ with a total of US Dollars 595,000 has been spread over a period of two years to reduce unbearable pressure on UNDP.

All heavy equipment with^{their} and supplies will be placed under direct control of the Engineering Section of the RDTWM project, which will record daily use and operation programming in order to fulfil the heavy earthmovement requirements specified on the submitted designs. The monitoring will also provide the implementation agencies with more reliable data on cost figures and actual displacement of soil and rock.

4.1.4 Miscellaneous (Figure 9, item 50)

| | |
|---|-------------------------|
| Operation cost and maintenance together with reporting cost and sundry | \$ 46,000 |
| <hr/> Grand total UNDP input | <hr/> US\$ 1,842,153.00 |

4.2 Additional Government Contribution

Further to the project operation (personnel) unit (see Appendix 6) the Royal Thai Government Contribution to RDTWM will be provided in:

4.2.1 Training (Figure 10, item 30)

Counterpart support on Fellowships,
Maintenance and Group Study Tours ฿ 719,000

4.2.2 Equipment (Figure 10, item 40)

4.2.2.1 Expendable items

seeds, piping, valves and other construction material, drawing, stationery and education supplies for the various work component to be carried out by the RTG agencies ฿8,050,000

4.2.2.2 Non-expendable items

nursery and plantation equipment
weaving, surveying, drawing and field equipment, tools and transportation (2 four-wheel drive cars) ฿2,700,000

4.2.2.3 Premises

extension to the project headquarters office, office furniture and equipment ฿ 550,000

Sub-Total

฿11,300,000

4.2.3 Miscellaneous (Figure 10, item 50)

| | | |
|---------|--|---------------|
| 4.2.3.1 | Running cost and maintenance of project heavy equipment and other operational cost repairs and maintenance | ₪ 4,150,000 |
| 4.2.3.2 | Communications: telephone, telegram and mail charges; preparation of maps report charts and their reproduction/ translation costs within the country | ₪ 430,000 |
| 4.2.3.3 | Travel expenses, per diem and tickets for counterparts and supporting personnel on their duty trips, meetings, seminars and training center etc. outside their duty stations | ₪ 1,670,000 |
| 4.2.3.4 | Sundry: All costs of import and custom clearance of project equipment, its transportation, handling, storage, and related expenses within the country such as insurance, provision of depot and storage facilities | ₪ 150,000 |
| | Sub-total | ₪ 6,400,000 |
| | Grand total | ₪42,179,576 |
| | aid 7% inflation rate | - ₪ 2,952,570 |
| | GRAND TOTAL | ₪45,132,146 |

Figure 9

PROJECT BUDGET COVERING UNDP CONTRIBUTION
(in US Dollars)

Country: THAILAND

Project No.: TEA/79/019

Title: Rural Development through Watershed Management in the Nam Phong Basin

| BUDGET HEADING | TOTAL | | 1983 | | 1984 | | 1985 | | 1986 | | 1987 | |
|---------------------------------|-------|---------|------|---------|------|---------|------|---------|------|---------|------|---------|
| | m/m | \$ | m/m | \$ | m/m | \$ | m/m | \$ | m/m | \$ | m/m | \$ |
| 10. <u>PROJECT PERSONNEL</u> | | | | | | | | | | | | |
| 11 <u>Experts</u> | | | | | | | | | | | | |
| 11-01 Chief Technical Adviser | 60 | 473,123 | 12 | 80,640 | 12 | 87,120 | 12 | 94,000 | 12 | 101,617 | 12 | 109,746 |
| 11-99 Sub total | 60 | 473,123 | 12 | 80,640 | 12 | 87,120 | 12 | 94,000 | 12 | 101,617 | 12 | 109,746 |
| 13 Administrative Support | 60 | 139,013 | 12 | 25,315 | 12 | 26,500 | 12 | 27,738 | 12 | 29,044 | 12 | 30,421 |
| 15 Official Travel | | 20,000 | | 5,000 | | 5,000 | | 4,000 | | 3,000 | | 3,000 |
| 16 Mission Travel | | 35,000 | | 8,000 | | 8,000 | | 7,000 | | 6,000 | | 6,000 |
| 17 National Consultants | | | | | | | | | | | | |
| 17-01 Engineering | 7 | 7,000 | 2 | 2,000 | 2 | 2,000 | 1 | 1,000 | 1 | 1,000 | 1 | 1,000 |
| 17-02 Watershed Manage./Economy | 6 | 6,000 | 2 | 2,000 | 1 | 1,000 | 1 | 1,000 | 1 | 1,000 | 1 | 1,000 |
| 17-03 Training | 6 | 6,000 | 2 | 2,000 | 1 | 1,000 | 1 | 1,000 | 1 | 1,000 | 1 | 1,000 |
| 17-04 Agronomy | 6 | 6,000 | 2 | 2,000 | 1 | 1,000 | 1 | 1,000 | 1 | 1,000 | 1 | 1,000 |
| 17-05 Others | 13 | 13,000 | - | - | 2 | 2,000 | 3 | 3,000 | 4 | 4,000 | 4 | 4,000 |
| 17-99 Sub total | 38 | 38,000 | 8 | 8,000 | 7 | 7,000 | 7 | 7,000 | 8 | 8,000 | 8 | 8,000 |
| 19 Component Total | 158 | 705,141 | 32 | 125,955 | 31 | 133,620 | 31 | 139,738 | 32 | 147,661 | 32 | 157,167 |
| 20. <u>SUBCONTRACTORS</u> | | | | | | | | | | | | |
| 21-01 Irrigation Engineering | 130 | 22,000 | 130 | 22,000 | - | - | - | - | - | - | - | - |
| 21-02 Road Const. Engineering | 32 | 5,000 | 32 | 5,000 | - | - | - | - | - | - | - | - |
| 21-03 Drinking Water supplies | 40 | 5,000 | 40 | 5,000 | - | - | - | - | - | - | - | - |
| 21-04 Muban Contact Persons | 1008 | 96,012 | 336 | 32,004 | 336 | 32,004 | 336 | 32,004 | - | - | - | - |
| 29 Component Total | 1210 | 128,012 | 538 | 64,004 | 336 | 32,004 | 336 | 32,004 | - | - | - | - |
| Sub Total | 1368 | 833,153 | 570 | 190,959 | 367 | 165,624 | 367 | 171,742 | 32 | 147,661 | 32 | 157,167 |

THA/79/019 (Page 2 of Figure 9)

PROJECT BUDGET COVERING UNDP CONTRIBUTION
(in US Dollars)

| BUDGET HEADING | TOTAL | | 1983 | | 1984 | | 1985 | | 1986 | | 1987 | |
|---|-------|-----------|------|---------|------|---------|------|---------|------|---------|------|---------|
| | m/m | \$ | m/m | \$ | m/m | \$ | m/m | \$ | m/m | \$ | m/m | \$ |
| 30. TRAINING | | | | | | | | | | | | |
| 31 Individual Fellowships | 97 | 130,000 | - | - | 15 | 20,000 | 28 | 33,000 | 36 | 48,000 | 18 | 24,000 |
| 32 Group Training External/ Study Tour | 45 | 90,000 | 5 | 10,000 | 10 | 20,000 | 10 | 20,000 | 10 | 20,000 | 10 | 20,000 |
| 33 In-Service Training | 65 | 65,000 | 15 | 15,000 | 15 | 15,000 | 15 | 15,000 | 10 | 10,000 | 10 | 10,000 |
| 39 Component Total | 207 | 285,000 | 20 | 25,000 | 40 | 55,000 | 53 | 73,000 | 56 | 78,000 | 38 | 54,000 |
| 40. EQUIPMENT | | | | | | | | | | | | |
| 41 Expendable equipment & Supplies | | 85,000 | | 65,000 | | 5,000 | | 5,000 | | 5,000 | | 5,000 |
| 42 Non-expendable equipment | | 595,000 | | 538,500 | | 47,500 | | 5,000 | | 2,000 | | 2,000 |
| 49 Component Total | | 680,000 | | 603,500 | | 52,500 | | 10,000 | | 7,000 | | 7,000 |
| 50. MISCELLANEOUS | | | | | | | | | | | | |
| 51 Operations and Maintenance | | 30,000 | | 10,000 | | 5,000 | | 5,000 | | 5,000 | | 5,000 |
| 52 Reporting Cost | | 6,000 | | 1,000 | | 1,000 | | 1,000 | | 1,000 | | 2,000 |
| 53 Sundry | | 10,000 | | 2,000 | | 2,000 | | 2,000 | | 2,000 | | 2,000 |
| 59 Component Total | | 46,000 | | 13,000 | | 8,000 | | 8,000 | | 8,000 | | 9,000 |
| 99 GRAND TOTAL | | 1,844,153 | | 832,459 | | 281,124 | | 262,742 | | 240,661 | | 227,167 |

Figure 10

PROJECT BUDGET COVERING RTG CONTRIBUTION (IN KIND)
(in Thai Baht)

Country: THAILAND

Project No. : THA/79/019

Title: Rural Development through Watershed Management in the Nam Phong Basin

| BUDGET HEADING | TOTAL | | 1983 | | 1984 | | 1985 | | 1986 | | 1987 | |
|---------------------------------|-------|-----------|------|---------|------|-----------|------|-----------|------|-----------|------|-----------|
| | m/m | ฿ | m/m | ฿ | m/m | ฿ | m/m | ฿ | m/m | ฿ | m/m | ฿ |
| 10. PERSONNEL | | | | | | | | | | | | |
| 11 Project Operations Unit(POU) | | | | | | | | | | | | |
| 11-01 Project Field Director | 60 | 464,458 | 12 | 83,220 | 12 | 87,797 | 12 | 92,626 | 12 | 97,720 | 12 | 103,095 |
| 11-02 Project Co-Field Dir. | 60 | 441,016 | 12 | 79,020 | 12 | 83,366 | 12 | 87,951 | 12 | 92,788 | 12 | 97,891 |
| 11-03 Engineer | 60 | 441,016 | 12 | 79,020 | 12 | 83,366 | 12 | 87,951 | 12 | 92,788 | 12 | 97,891 |
| 11-04 Field Evalu. Officer | 60 | 403,512 | 12 | 72,300 | 12 | 76,277 | 12 | 80,472 | 12 | 84,897 | 12 | 89,566 |
| 13 Support Personnel to POU | | | | | | | | | | | | |
| 13-01 Field Coordinator | 60 | 403,512 | 12 | 72,300 | 12 | 76,277 | 12 | 80,472 | 12 | 84,897 | 12 | 89,566 |
| 13-02 Field Supervisor | 60 | 403,512 | 12 | 72,300 | 12 | 76,277 | 12 | 80,472 | 12 | 84,897 | 12 | 89,566 |
| 13-03 Heavy Equip. Officer | 54 | 350,311 | 6 | 34,491 | 12 | 72,732 | 12 | 76,732 | 12 | 80,952 | 12 | 85,404 |
| 13-04 Administrative Officer | 60 | 403,512 | 12 | 72,300 | 12 | 76,277 | 12 | 80,472 | 12 | 84,897 | 12 | 89,566 |
| 13-05 Mechanic | 108 | 379,251 | 12 | 37,320 | 24 | 78,745 | 24 | 83,076 | 24 | 87,645 | 24 | 92,465 |
| 13-06 Heavy Equip. Operator | 432 | 1,292,142 | 48 | 199,280 | 96 | 251,681 | 96 | 265,523 | 96 | 280,126 | 96 | 295,532 |
| 13-07 Secretary/Typist | 60 | 236,787 | 12 | 42,420 | 12 | 44,753 | 12 | 47,214 | 12 | 49,810 | 12 | 52,590 |
| 13-08 Typist | 60 | 138,210 | 12 | 24,780 | 12 | 26,143 | 12 | 27,581 | 12 | 29,098 | 12 | 30,608 |
| 13-09 Accountant | 60 | 138,210 | 12 | 24,780 | 12 | 26,143 | 12 | 27,531 | 12 | 29,098 | 12 | 30,608 |
| 13-10 Store-keeper | 60 | 113,519 | 12 | 20,340 | 12 | 21,459 | 12 | 22,639 | 12 | 23,884 | 12 | 25,197 |
| 13-11 Computer Operator | 42 | 258,748 | - | - | 6 | 34,970 | 12 | 73,787 | 12 | 77,345 | 12 | 82,126 |
| Sub Total | 1,296 | 5,877,695 | 198 | 913,871 | 270 | 1,116,263 | 276 | 1,214,549 | 276 | 1,381,342 | 276 | 1,351,671 |

THA/79/019 (Page 2 Figure 10)

PROJECT BUDGET COVERING RTG CONTRIBUTION (IN KIND)
(in Thai Baht)

| | TOTAL | | 1983 | | 1984 | | 1985 | | 1986 | | 1987 | |
|------------------------------|-------|------------|------|-----------|------|-----------|------|-----------|------|-----------|------|-----------|
| | m/m | ฿ | m/m | ฿ | m/m | ฿ | m/m | ฿ | m/m | ฿ | m/m | ฿ |
| 13-12 Radio Operator | 60 | 108,495 | 12 | 19,440 | 12 | 20,509 | 12 | 21,637 | 12 | 22,827 | 12 | 24,082 |
| 13-13 Driver | 300 | 652,987 | 60 | 117,000 | 60 | 123,435 | 60 | 130,224 | 60 | 137,386 | 60 | 144,942 |
| 13-14 Watchman | 120 | 196,899 | 24 | 35,280 | 24 | 37,220 | 24 | 39,267 | 24 | 41,427 | 24 | 43,705 |
| 13-15 Messenger | 60 | 88,742 | 12 | 15,900 | 12 | 16,775 | 12 | 17,698 | 12 | 18,671 | 12 | 19,698 |
| 13-16 Cleaning person | 60 | 88,742 | 12 | 15,900 | 12 | 16,775 | 12 | 17,698 | 12 | 18,671 | 12 | 19,698 |
| 13-19 Component Total | 1,896 | 7,013,561 | 318 | 1,117,391 | 390 | 1,330,977 | 396 | 1,441,073 | 396 | 1,520,324 | 396 | 1,603,796 |
| <u>Support Personnel</u> | | | | | | | | | | | | |
| <u>(Part-time)</u> | | | | | | | | | | | | |
| 13-20 Project Director(RFD) | 14 | 188,660 | 2 | 24,530 | 3 | 38,445 | 3 | 40,095 | 3 | 41,895 | 3 | 43,695 |
| 13-21 Project Co-Dir.(DOAE) | 14 | 188,660 | 2 | 24,530 | 3 | 38,445 | 3 | 40,095 | 3 | 41,895 | 3 | 43,695 |
| 13-22 Planning Adviser(DOAE) | 15 | 141,939 | 3 | 25,425 | 3 | 26,833 | 3 | 28,308 | 3 | 29,865 | 3 | 31,508 |
| 13-23 Planning Adviser(RFD) | 15 | 141,939 | 3 | 25,425 | 3 | 26,833 | 3 | 28,308 | 3 | 29,865 | 3 | 31,508 |
| 13-24 Liaison Officer (RFD) | 15 | 141,939 | 3 | 25,425 | 3 | 26,833 | 3 | 28,308 | 3 | 29,865 | 3 | 31,508 |
| 13-25 Liaison Officer(DOAE) | 15 | 141,939 | 3 | 25,425 | 3 | 26,833 | 3 | 28,308 | 3 | 29,865 | 3 | 31,508 |
| 13-26 Liaison Officer (RID) | 15 | 141,939 | 3 | 25,425 | 3 | 26,833 | 3 | 28,308 | 3 | 29,865 | 3 | 31,508 |
| 13-27 Labour (Unskilled) | 1450 | 15,660,000 | 250 | 2,700,000 | 300 | 3,240,000 | 300 | 3,240,000 | 300 | 3,240,000 | 300 | 3,240,000 |
| 13-99 Component Total | 3449 | 23,760,576 | 587 | 3,993,576 | 711 | 4,782,032 | 717 | 4,902,803 | 717 | 4,993,439 | 717 | 5,088,726 |
| 30. TRAINING | | | | | | | | | | | | |
| 31 Fellowship Maintenance | 157 | 424,000 | 7 | 24,000 | 50 | 132,000 | 60 | 156,000 | 40 | 112,000 | - | - |
| 32 Group Study Tour | 11 | 295,000 | 3 | 85,000 | 4 | 90,000 | 2 | 60,000 | 2 | 60,000 | - | - |
| 39 Component Total | 168 | 719,000 | 10 | 109,000 | 54 | 222,000 | 62 | 216,000 | 42 | 172,000 | - | - |
| Sub Total | 3617 | 24,479,576 | 597 | 4,102,576 | 765 | 5,004,032 | 770 | 5,118,803 | 759 | 5,165,439 | 717 | 5,088,726 |

THA/79/019 (Page 3 of Figure 10)

PROJECT BUDGET COVERING RTG CONTRIBUTION (IN KIND)
(in Thai Baht)

| | TOTAL | | 1983 | | 1984 | | 1985 | | 1986 | | 1987 | |
|--------------------------------------|-------------|-------------------|------------|------------------|------------|-------------------|------------|-------------------|------------|------------------|------------|------------------|
| | m/m | ฿ | m/m | ฿ | m/m | ฿ | m/m | ฿ | m/m | ฿ | m/m | ฿ |
| 40. EQUIPMENT | | | | | | | | | | | | |
| 41 Expendable Equipment | | 8,050,000 | | 600,000 | | 2,600,000 | | 2,800,000 | | 1,200,000 | | 850,000 |
| 42 Non-expendable Equipment | | 2,700,000 | | 190,000 | | 650,000 | | 800,000 | | 800,000 | | 260,000 |
| 43 Premises | | 550,000 | | 200,000 | | 350,000 | | - | | - | | - |
| 49 Component Total | | 11,300,000 | | 990,000 | | 3,600,000 | | 3,600,000 | | 2,000,000 | | 1,110,000 |
| 50. MISCELLANEOUS | | | | | | | | | | | | |
| 51 Equipment operation & maintenance | | 4,150,000 | | 300,000 | | 900,000 | | 1,200,000 | | 900,000 | | 850,000 |
| 52 Communications | | 430,000 | | 90,000 | | 90,000 | | 80,000 | | 80,000 | | 90,000 |
| 53 Travel Expenses | | 1,670,000 | | 350,000 | | 400,000 | | 350,000 | | 300,000 | | 270,000 |
| 54 Sundry | | 150,000 | | 20,000 | | 25,000 | | 30,000 | | 35,000 | | 40,000 |
| 59 Component Total | | 6,400,000 | | 760,000 | | 1,415,000 | | 1,660,000 | | 1,315,000 | | 1,250,000 |
| 99 Grand Total | | 42,179,576 | | 5,852,576 | | 10,019,032 | | 10,378,803 | | 8,480,439 | | 7,448,726 |
| 7% inflation rate | | 2,952,570 | | 409,680 | | 701,332 | | 726,516 | | 593,630 | | 521,412 |
| GRAND TOTAL | 3617 | 45,132,146 | 597 | 6,262,256 | 765 | 10,720,364 | 779 | 11,105,319 | 759 | 9,074,069 | 717 | 7,970,138 |
| | | | | | | | | | | | | |
| GRAND TOTAL RTG | Baht | 45,132,146 | | 6,262,256 | | 10,720,364 | | 11,105,319 | | 9,074,069 | | 7,970,138 |
| GRAND TOTAL UNDP | US\$ | 1,844,153 | | 832,459 | | 281,124 | | 262,742 | | 240,661 | | 227,167 |

Appendix 1

National Development Objectives
of the Fourth Plan 1977-1981

The major objectives for economic and social development of the Fourth Plan can be summarized as follows:

- (1) to accelerate economic recovery during the period of 1977-1981,
- (2) to reduce income disparities and accelerate rural income and employment,
- (3) to reduce population growth rate, improve manpower quality and increase the level of employment,
- (4) to improve the management of critical resources and rehabilitate environmental conditions.

The Specific Socio-Economic Development Strategy adopted by the Government during the Fourth Plan period for:

A. Development and Conservation of Critical Economic Resources and Environment is:

to give high priority to problems concerning the utilization and management of national critical economic resources, especially land, forestry, water, minerals, energy and fuel, as well as problems relating to environmental deterioration which have resulted from previous neglect.

B. Rural Productivity Improvement and Diversification are:

- (1) Further diversification of production in the agricultural sector will be encouraged through more intensive land and under-employed labour as well as promotion of mixed farming in which production can be undertaken on a year round basis. At the same time, diversification of crop production among from the major crops (rice, maize, sugarcane, topioca and kenaf) so that risks from price fluctuation which effects farm income levels can be reduced. Resources endowments in each region have to be taken into consideration in promoting the cultivation of less important crops, namely the availability of

land and water resources,

- (2) To increase rural productivity it will be necessary to use greater amounts of basic resources in agriculture such as land, water and labour. The linkage between agricultural research and extension services will be further strengthened and expanded within the areas designated for agricultural promotion, modern input will be increased to meet demand by farmers.

The Government is now implementing a land reform programme and land improvement project for stimulating productivity increase in the Northeast region. The expansion of on-farm irrigation to cover additional 2.7 million rai will be implemented during the Fourth Plan period. The problem of drought in certain parts of the Northeast will receive high priority. At the same time, the supply of high quality seeds and agricultural credit will be expanded. The coordination of various agricultural activities, namely research, extension, national resources development and conservation, production, and marketing will be improved in each location.

Appendix 2

Muban Contact Persons

The Muban Contact Persons (MCP) shall be a vital link between the RDTWM, Implementation Agencies, and its target population. During the first three years the MCP will be motivated and prepare the villagers for the interaction with the project activities. Furthermore, these persons shall initially assist in the socio-economic survey, help to collect data and in some cases to implement small programmes.

The MCP will be grouped into small teams of three people, at least one of whom shall be a woman, and will rotate between their respective Mubans. All MCP shall be recruited from their own Muban and be selected in close consultation with the concerned Tambon and District authorities by their own people (selection is based on schooling, further education, training, age, time availability and trust). The present Contact Farmers, working under the guidance of DOAE, will be incorporated for the selection of a minimum requirement of twenty-eight MCP.

The MCP will be trained and supported by RDTWM project for about one month before officially starting their work. The project Co-Field Director and Field Supervisor shall manage the MCP and supervise their activities.

The costs for the MCP shall tentatively be:

| | <u>Baht/person/year</u> |
|---|-------------------------|
| - Training | 2,000 |
| - Salary | 20,000 |
| - Transport allowance | 500 |
| - Living allowance | 1,800 |
| - Bonus paid at end of yearly contract 10% | 2,000 |
| <hr/> | |
| Total Baht | 26,300 |
| = US Dollars | 1,143 |
| <hr/> | |
| 28 MCP per year totalling | US Dollars 32,004 |
| <hr/> | |

The task of the MCP should be:

The MCP shall work intensively with the target population, the RDTWM project and the concerned implementation agencies - therefore become the vital link for RDTWM and shall:

- prepare the target population to interact with the project and government services;
- encourage the target population to devise methods to help themselves;
- inform both the RDTWM operation unit and the government bodies concerned about the situation in the project area;
- help the villagers to understand their role in the development process and in particular their role in relation to their environment;
- facilitate the contact between the villagers and the RTG in order to strengthen a higher level of integration;
- act to a certain extent as resource person.

Appendix 3

JOB DESCRIPTIONS

1. Project Field Director

The Project Field Director shall manage the project in mutual agreement and with the advise of the Chief Technical Adviser, This includes as head of Section 2: Programme Implementation, among other tasks:-

- be fully responsible for the overall administration;
- authorize and be fully responsible for the project expenditure from the Thai counterpart contribution;
- consult closely with the Chief Technical Adviser, who is responsible for the UNDP/FAO contribution, about expenditure from funds;
- be fully responsible, with the assistance of the project staff, CTA, and RTG liaison officers for the planning and programme implementation sections;
- prepare together with the project staff operation plans, budget and personnel plans;
- coordinate the project activities with other ministries, line agencies and institutions;
- report on project activities;
- convene and chair the staff and coordination meetings;
- be responsible for the timely production of project documents;

The Project Field Director shall be responsible to the Directors of RFD and DOAE.

2. Chief Technical Adviser (CTA)

The Chief Technical Adviser shall be the main adviser to MOAC for the RDTWM project. This shall include in particular:

- advise the Project Field Director and Co-Field Director on all

matters concerning the RDTWM activities;

- be responsible for Section 1: Planning, supported closely by the Project Field Director;
- disburse UNDP/FAO Project funds and account for them;
- be involved in the selection of staff;
- coordinate, supervise and assist the work of UNDP/FAO funded personnel, both long term and short term staff;
- be responsible for all consulting and or subcontract work;
- report to UNDP/FAO about project progress;
- be responsible for all purchased equipment brought or transferred through UNDP/FAO to the Project.
- approve fellowships and study tours for project personnel to be financed by UNDP/FAO;
- take part in negotiations for the implementation of the operation plans;
- liaise between the Thai project authority and UNDP/FAO project authority.

The Chief Technical Adviser shall be responsible to the Under-Secretary of Ministry of Agriculture and Cooperatives and in his capacity as FAO employee to the concerned authorities of UNDP/FAO.

3. Training/Extension Officer

The Training/Extension Officer, heading Section : Training/Extension should organise, build up and manage the training/extension aspects of RDTWM and in particular:

- assist subject matter specialists in the development of curricula;
- develop internal training courses for staff;
- organise and supervise and participate in training activities, especially concerning the training of Muban Contact Persons and agricultural Contact Farmers (already present within the area);
- supervise the work of all the contact personnel;
- manage all administrative tasks in relation with all the contact personnel;

- develop a system that assures the desired work impact and feedback to the management by the contact personnel;
- organise and run training courses;
- organise and manage all matters pertaining to fellowship tours and study tours in close consultation with the Field Director and Chief Technical Adviser;
- establish a reference system with regard to relevant training courses in Thailand and abroad and keep it up to-date;
- organise and implement orientation seminars and motivation activities for the RDTWM;

The Training/Extension officers shall be responsible for the work to the project management and indirectly to the Department of Agricultural Extension and RFD.

4. Engineer

The engineer with the assistance of one heavy equipment supervisor shall head Section 4: Engineering, and shall organise, build up and manage the engineering programme of the RDTWM and in particular:

- supervise, scrutinise, coordinate and participate in all activities with regard to field surveys, drawing and technical designs of engineering structures;
- supervise, coordinate and certify all engineering activities to be planned and constructed within the project area;
- be fully responsible to plan, set-up, organise, supervise and coordinate Section 4 of the RDTWM management unit and the project's earthmovement requirements for the planned engineering structures submitted by the RTG agencies;
- develop, set-up and operate a recording system for the project's earthmoving equipment and data bank for the project;
- keep an adequate accounting and recording system of the project's equipment and personnel for the RDTWM and RTG agencies;
- cooperate closely with the monitoring and evaluation section of the RDTWM.

The engineer shall be responsible for the work to the project management and indirectly to the Director of the Royal Irrigation Department.

5. Field Evaluation Officer

The field Evaluation Officer shall head Section 5: Monitoring, Evaluation and Data Collection and carry out the following tasks:

- be fully responsible to plan, set-up and manage Section 5 of the RDIWM operation unit;
- develop a recording system and a data bank for the project;
- supervise, coordinate and participate in all activities with regard to surveys, monitoring and evaluation activities;
- cooperate closely with the monitoring and evaluation unit of MOAC.

The Field Evaluation Officer shall be responsible to the project management,

6. Administrative Officer

The Administrative Officer as head of Section 6: Administration, with the assistance of a UNDP/FAO funded administrative clerk, shall be responsible for the administration of the RDIWM management. In particular the following tasks shall be carried out:

- build up and manage an appropriate project administration;
- supervise the project store and keep the necessary inventories;
- be responsible for the management of the project vehicles (excluding heavy equipment) and the purchase of local material and equipment;
- participate in public relation activities;
- organise and run the project documentation;
- keep an adequate accounting and book keeping system for the RDIWM expenditures;
- be responsible for the coordination of the production of project papers and documents (typing, compiling, etc.).

The administrative officer shall be responsible to the project management,

General Remarks

- The Senior Thai Officers, as other staff, working closely with the Chief Technical Adviser must be fluent at least in speaking English.

- The RDTWM personnel shall be composed of experienced staff for officer posts and a mixture of beginners and partly experienced people with regard to the support personnel.

- All RDTWM personnel are responsible to their respective senior section officers, whom in their terms are directly responsible to the Project-Field Director and the Chief Technical Adviser.

Appendix 4

Planned Project Activities (1982)
Part II E. and F. of the Project Document

Part II E. Outputs

1. Demarcation of a pilot area of some 35,000 ha (about 210,000 rai), in the watershed of the Nam Phong reservoir some 60 km west of Khon Kaen;
2. Results and analysis of detailed socio-economic survey of the pilot area;
3. Results and analysis of detailed soil survey and land capability study of the area between the inner Forest Reserve boundary and the legally occupied arable fields under irrigation;
4. Results and analysis of detailed forest inventory of the project area;
5. A comprehensive plan for implementation of the project, including resettlement of affected farmers where necessary, staffing, training and equipment requirements as well as requirements for international assistance in the form of a comprehensive draft UNDP/FAO project document.

The plan will include:

1. Aerial photo interpretation of current land use;
2. A description of present land use and degree of erosion;
3. A forest inventory of commercial forests within the Forest Reserve;
4. A detailed survey of soils, land capability and land use of area between the present inner boundary of the Forest Reserve and the arable legally occupied fields under surface irrigation including the upper Northern part of the watershed, presently under natural forest, which may be suitable for potential agricultural development (of the order of 20 Km²); a land use plan of this boundary zone;

5. A map detailing a new Forest Reserve inner boundary which excludes the slopes less than 35% below the 300 m. contour based upon the completed survey of land capability and land use suitability;
6. A survey of agricultural land within the Phu Wiang crater and proposals for improvements;
7. A survey of the irrigation possibilities within the crater and proposals for their development;
8. A survey of the socio-economic conditions of the area, with the advice of the District Officer, special attention to illegal forest cultivators;
9. A comprehensive plan for implementing the change from present to proposed land use, including the resettlement of illegal farmers between the legally occupied arable fields under surface irrigation and the existing inner forest land boundary (Forest Reserve). The plan will include incentive for resettlement including the opportunity to earn legal title by soil conservation and good farming;
10. A study of the present provision of forest guards and forest police with responsibility to protect the Forest Reserve from illegal settlement and recommendations for reinforcement as necessary, including provision for accommodation, communications and vehicles;
11. Preparation of a Forest Management Plan with detailed proposals for the promotion of village-scale forest industries under the close control of the Forest Department, including cessation of large-scale extraction by concessionaires (currently forbidden under military security orders), the sale of marked trees for pit-sawing and the organization of firewood harvesting and charcoal burning;
12. A reforestation plan of steep denuded areas and on presently cleared land and communal village areas not suitable for agricultural development, located outside the present Forest Reserve;

13. The fire protection plan of the forested slopes;
14. The setting up of a local advisory committee under the chairmanship of the District Officer between the RFD, Department of Agricultural Extension with the Project Field Director providing the secretariat;
15. A detailed set of recommendation and master plan for the implementation of the watershed management and development plan. These will include:
 - (a) specification of the responsibilities of government agencies;
 - (b) budgetary requirements within each participating department, both for capital and recurrent costs, set out in accordance with government procedures;
 - (c) staffing requirements for each responsible government agency;
 - (d) training requirements for each responsible government agency;
 - (e) equipment requirements, including provisions for maintenance, repair and fuel;
 - (f) operating costs including expendable equipment;
 - (g) proposals for international assistance in the form of a comprehensive, fully budgeted UNDP/FAO draft project document.
16. Small-scale demonstration activities will be carried out during the first year to maintain the initial farmers interest towards development on communal village and forest reserve areas.

PART II.F. Project Activities

| | <u>Location</u> | <u>Starting date and duration</u> |
|--|-------------------------------------|-----------------------------------|
| 1. Chief Technical Adviser establishes Field Project Office in Phu Wiang | Phu Wiang | January 1982 (one year) |
| 2. Aerial photography and aerial reconnaissance (RFD) | Phu Wiang (400 Km ²) | September (one month) |
| 3. Forest inventory (RFD) | Project area | October (7 months) |

| | <u>Location</u> | <u>Starting date and duration</u> |
|---|--|---------------------------------------|
| 4. Land use and capability study (RFD & DOAE) | Phu Wiang Agri. boundary zone | January 1982 (4 months) |
| 5. Socio-economic study of illegal forest settlers and within the agricultural boundary zone above the legally occu- pied arable fields under surface irri- gation and in forest reserve. Socio- economic study of Central Plain (RFD & DOAE) | Phu Wiang Forest Reserve and Central Plain | January 1982 (3 months) |
| 6. Study of irrigation potentials, iden- tification of sites and irrigation comm.and area. (RFD & DOAE) | Central Plain Phu Wiang | January 1982 (2 months) |
| 7. Economic and technical study of agricultural opportunities (RFD & DOAE) | Phu Wiang Central Plain | January 1982 (4 months) |
| 8. Detailed survey and permanent marking of Forest Reserve Boundary (RFD) | Above the Agri. zone | January 1982 (4 months) |
| 9. Study of opportunities for village scale forest products and home industries together with an economic and technical study of agricultural opportunities (RFD & DOAE) | Phu Wiang Reserve and Central Plain | March 1982 (4 months) |
| 10. Detailed survey and marking of resettlement areas (RFD & DOAE) | Agricultural boundary zone | February 1982 (4 months) |

| | <u>Location</u> | <u>Starting date and duration</u> |
|---|---|---------------------------------------|
| 11. Discussions with Government departments on detailed plans for the implementation phase: detail of budget for each Department staff, training and equipment (DTEC, RFD, DOAE, Budget Bureau and UNDP). | Central Plain boundary zone, Forest reserve | May 1982 (4 months) |
| 12. Preparation of a full draft for an UNDP/FAO project document presentation to relevant Department with a view to continuing the momentum of the work in Phu Wiang, (RFD, DOAE, DTEC, UNDP) | Phu Wiang, Bangkok | July 1982 (2 months) |

Appendix 5

Immediate Implementation Activities in the Project
Area (1981/82)

During the 12 months of the orientation/planning phase the RDTWM project will start its development activities by implementing some immediate measures, mainly in the form of small-scale demonstration activities to maintain the initial farmers' interest towards development, through the two main counterpart departments (RFD and DOAE) of the RDTWM. Such measures have been identified during the various field trips in the project area and budgeted for in anticipation of the signing of the revised project document.

These immediate activities next to the completion of the forest - inventory survey, which started five months ago, are the following:

1. Forest plantation with nursery for
 - woodlot 50 rai;
 - rehabilitation 350 rai.

2. Land use with nursery establishment
 - fruit trees 40 rai;
 - range management seed collection 10 rai;
 - range management demonstration 50 rai.

3. Agricultural extension measures
 - soybean introduction
 - kenaf cultivation techniques
 - vegetable cultivation techniques
 - horticulture cultivation techniques
 - sponsor youth clubs and female activities in agriculture and rural development
 - compost making
 - chicken raising.

Appendix 6

Staff Requirement
Project Operation Unit

| Budget No. | Position | Employment | Fiscal Year | | | | |
|------------|--|------------|-------------|------|------|------|------|
| | | | 1983 | 1984 | 1985 | 1986 | 1987 |
| 11-01 | Project Field Director (Prog. Imple. Officer) | RFD | 1 | 1 | 1 | 1 | 1 |
| 11-02 | Project Co-Field Director (Training/Exten. Officer) | DOAE | 1 | 1 | 1 | 1 | 1 |
| 11-03 | Field Evaluation Officer | RFD | 1 | 1 | 1 | 1 | 1 |
| 11-04 | Engineer (Irrigation) | RID | 1 | 1 | 1 | 1 | 1 |
| 11-01* | Chief Technical Adviser | UNDP/FAO | 1 | 1 | 1 | 1 | 1 |
| 13-01* | Admin. Assistant | UNDP/FAO | 1 | 1 | 1 | 1 | 1 |
| 13-01 | Admin. Officer | RTG | 1 | 1 | 1 | 1 | 1 |
| 13-02 | Field Coordinator | RFD | 1 | 1 | 1 | 1 | 1 |
| 13-03 | Field Supervisor | DOAE | 1 | 1 | 1 | 1 | 1 |
| 13-04 | Planning Assistant | RTG (DLI) | 1/2 | 1 | 1 | 1 | 1 |
| 13-05 | Computer Operator | RTG | - | 1/2 | 1 | 1 | 1 |
| 13-06 | Heavy Equip. Officer | RTG | 1/2 | 1 | 1 | 1 | 1 |
| 13-07 | Mechanic | RTG | 2 | 2 | 2 | 2 | 2 |
| 13-08 | Heavy Equip. Operator | RTG | 4 | 8 | 8 | 8 | 8 |
| 13-09 | Radio Operator | RTG | 1 | 1 | 1 | 1 | 1 |
| 13-10 | Secretary/Typist | RTG | 1 | 1 | 1 | 1 | 1 |
| 13-11 | Typist | RFD | 1 | 1 | 1 | 1 | 1 |
| 13-12 | Accountant | RTG | 1 | 1 | 1 | 1 | 1 |
| 13-13 | Store-keeper | RTG | 1 | 1 | 1 | 1 | 1 |
| 13-14 | Driver | RTG | 5 | 5 | 5 | 5 | 5 |
| 13-15 | Messenger | RTG | 1 | 1 | 1 | 1 | 1 |
| 13-16 | Cleaning person | RTG | 1 | 1 | 1 | 1 | 1 |

* UNDP contribution

Appendix 7

Terms of Reference for Short Term National Consultants

(Figure 9, item 17)

From the beginning of the fiscal year 1983 (January) the RDTWM will start implementing its proposed plan of operation. The project plan shall contain the elements described in Chapter 1, Section 1.3 - Strategy and Implementation. Hence, the RDTWM project operation unit needs the support of technicians and specialists who can prepare, in close coordination with the RDTWM management, operation plans for first five years of the implementation phase.

Assignment

✓ The Proposed Project Budget concerning UNDP contribution (Figure 9, item 17), will provide the project with thirty eight man-months during which part-time national consultants will be engaged for the following activities:

1. Engineering (Figure 9, item 17-01)

The short term part-time consultant should, in close cooperation with the potential implementation agencies and RDTWM operation unit, assist the Engineering Section of RDTWM in doing the following:

- advise on improvements of field surveys, drawings, designs and construction work of all engineering components, with particular concern for weir, dam and fish pond construction;
- examine the existing water storage facilities and suggest plans for the required improvements;
- examine the existing road systems and suggest plans for the improvements of these roads.
- identify villages where a domestic water supply system could be improved and/or constructed and formulate an operation plan including targets, budget, personnel requirements etc.

- formulate an economic effect frame work for the RDTWM Engineering Section in recording and monitoring the yearly planned activities;
- advise on heavy equipment operation and recording procedures,
- examine, advise and scrutinise the plans of the sub-contractors (irrigation -, road construction, engineering and drinking water supplies;
- advise on sprinkler irrigation equipment and material requirement for two selective upland sites and subsequent operation programme.

All studies shall contain all details needed (timing, finances, materials, personnel and heavy equipment component etc.) for the formulation of an operation plan.

The assignment should last a total of seven months spread out over a five year period, during which the first two years, will be for a period of two months each, followed by a one month period per year as follow-up services and reporting. The reports shall be presented to the RDTWM at the end of each working period, and be written in English.

2. Watershed Management Economist

The short-term (part-time) consultant should in close cooperation with the potential implementation agencies and RDTWM operation unit assist the planning Programme Implementation and Monitoring Evaluation and Data Collection Sections of RDTWM in doing:

- advise on the formulation of an economic, effective frame-work in recording and monitoring the yearly planned activities for Section 5. Monitoring, Evaluation and Data Collection.
- advise on hydrological applied research requirements, and formulate detailed description of the programme needed;
- advise on comprehensive watershed protection and forest management plan;

- advise on a comprehensive farm management plan and recording system;

- advise on range management activities and recording system.

All studies shall contain all details needed (timing, finances, materials, personnel and other necessary requirements) for the formulation of an operation plan.

The assignment should last a total of six months spread out over a five years period during which the first year a period of two months, and followed by a one month period per year as follow-up services and reporting. The reports shall be presented to the RDTWM at the end of each working period and be written in English.

3. Training

The short-term (part-time) consultant should, in close cooperation with potential implementation agencies and RDTWM operation unit assist the Training/Extension Section of RDTWM in doing the following work:

- advise, set up and develop a training programme of the RDTWM project;
- formulate an effective frame-work for the Training/Extension Section;
- advise on the development of curricula;
- advise and formulate a programme for the RDTWM Muban Contact Personnel;
- advise and formulate a programme on internal training courses for staff;
- advise and formulate a programme on farmers' training courses, field days and display activities;

- advise and formulate a programme on training courses for RTG officials, seminars, symposium, publications and pamphlet, and other mass media e.g. radio, TV., films, slides, etc.

All studies shall contain all details needed (timing, finances, personnel, etc.) for the formulation of an operation plan.

The assignment should last a total of six months, spread out over a five year period, during which the first year a period of two months and followed by a one month period per year as follow-up services and reporting. The report shall be presented to the RDTWM at the end of each working period and be written in English.

4. Agronomy

The short term (part-time) consultant should in close cooperation with the potential implementation agencies and RDTWM operation unit assist the Planning, Programme Implementation, Training/Extension and Monitoring Evaluation and Data Collection Sections of RDTWM in doing the following work:

- advise on the formulation of an economic effective frame-work for the agricultural and horticultural components, based upon the Soil and Land Capability Classification and Irrigation Surveys;
- advise and formulate a comprehensive management plan for upland (dry land) and lowland (irrigated land) agricultural cropping activities, including the use of sprinkler irrigation facilities;
- advise on recommended crop varieties, fertilizer and other management requirements for existing crops;
- advise on potential new crops to be introduced for upland and lowland agricultural activities and their requirements;
- advise on multipurpose and intercropping practices to intensify land use;
- advise on alternative agricultural opportunities;

All studies shall contain all details needed (timing, finances, personnel etc.) for the formulation of an operation plan.

The assignment should last a total of six months, spread out over a five year period, during which the first year a period of two months and followed by a one month period per year as follow-up services and reporting. The report shall be presented to the RDTWM at the end of each working period and be written in English

5. Others (Figure 9, item 17-05)

A total of thirteen man-months will be allocated to different part-time consultants over the latter part of the operation/implementation phase of the RDTWM project, which will be yearly reviewed in accordance with the needs. No definite commitment can be given on the type, terms of reference and/or timing of these required persons, but present thoughts would demand consultant advise on Institutional Building, Marketing and Credit, Economy, Farm management, Livestock, Health, Education and Community Development.

The provisional budget requirement allocates a total of 2 months for 1984, three months for 1985, four months for 1986 and further four months for 1987.

The short term (part-time) local consultants shall be chosen by the RDTWM in consultation with RFD, DOAE and UNDP. It might be fruitful to have the consultants working in a team to encourage and stimulate the integration between the various RTG agencies in this multi-purpose development project.

Appendix 8

Terms of Reference for Local Sub-Contractors

Background

During the fiscal year 1983 (January to December) the RDTWM will start implementing its operation plan. The project plan shall contain the elements described in Chapter 1, Section 1.3 Strategy and Implementation. Hence, the RDTWM project operation unit needs the support of technicians and specialists who can prepare, in close cooperation with the RDTWM management, and potential implementation agencies, operation plans for the first year implementation phase, as RTG agencies are already committed to their respective work programmes, staff and equipment allocations. (see reference background and Section 2.3.5).

Assignments

The Proposed Project Budget concerning UNDP contribution (Figure 9, item 20), will provide the project with one thousand two hundred and ten man-months^{*} during which temporary national sub-contractors will be engaged for the following activities:-

1. Irrigation Engineering (Figure 9, item 20-01)

The short term sub-contractor should, in close cooperation with the potential implementation agencies and RDTWM project operation unit, assist the Engineering Section of RDTWM, in doing the following work:

- carry out detailed follow-up field surveys of the identified sites for weir, dam or fish pond construction, together with its water distribution system, for planned irrigation;
- carry out drawing and design work from the detailed field surveys in order to have for each site its own specific set of work plans and budget costs, splitted up in material, heavy earthmovement, and man-power (labour) requirements;

* of which 538 man-months for the first year,

- carry out close and regular of the spot technical supervision on the actual implementation or construction work of the designed and approved work components, whereby the specified heavy earthmovement requirements will be carried out and recorded by the Engineering Section of RDTWM project.

The assignment should be for a total of six dams or weirs and four fish ponds and be completed by the month of July 1983 at a total cost of US\$22,000 paid out in local currency, The reports accompanying the drawings shall be presented to the RDTWM project and be written in English, where the plans will be scrutinized and approved by the Engineering Section.

2. Road Construction Engineering (Figure 9, item 21-02)

The short term sub-contractor should in close cooperation with the potential implementation agencies and RDTWM project operation unit, assist the Engineering Section of the RDTWM, in doing the following work:

- carry out detailed follow-up surveys of the identified roads or road sections;
- carry out drawing and design work from the detailed field surveys, in order to have for each road or road section its own specific set of workplan and budget costs, splitted up in material, heavy earthmovement and man-power (labour) requirements;
- carry out close and regular on the spot technical supervision on the actual implementation or construction work of the designed and approved work components, whereby the specified heavy earthmovement requirements will be carried out and recorded by the Engineering Section of the RDTWM project.

The assignment should be for a total of ten kilometers of road and be completed by the month of July 1983, at a total cost of US Dollars 5,000 paid out in local currency.

The reports accompanying the drawings shall be presented to the RDTWM project and be written in English where the plans will be scrutinised and approved by the Engineering Section of the RDTWM project.

3. Drinking Water Supplies (Figure 9, item 21-03)

The short term sub-contractor should in close cooperation with the potential implementation agencies and RDTWM project operation unit, assist the Engineering Section of RDTWM, in doing the following work:

- carry out detailed field surveys of village locations, where a potable water supply is requested or identified;
- carry out drawings and design work from the detailed field surveys, in order to have for each water supply facility its own specific set of workplans and budget costs, splitted up in material, drilling or digging, and man-power (labour) requirements;
- carry out close and regular on the spot technical supervision on the actual implementation or construction work of the designed and approved work components, in close coordination with the Engineering Section of the RDTWM project, which will perform the required drilling operations.

The reports accompanying the drawings shall be presented to the RDTWM project and be written in English where the plans will be scrutinised and approved by the Engineering Section of the RDTWM project.

The assignment should be for a total of ten boreholes and be completed by the months of July 1983, at a total cost of US Dollars 5,000 paid out in local currency.

4. Muban Contact Persons (Figure 9, item 21-04)

See Appendix 2 for further detailed and costs.

Appendix 9

Expendable Equipment and Supplies
covered by UNDP Contributions (Figure 9, item 41)

For the first year (Jan-Dec 1983) of the implementation programme:

- outlet pipes with valves for dams, fish ponds
and domestic water supplies
- Cement
- reinforced wire
- lining
- fuel for the heavy equipment units
- repair work for heavy equipment and
spare parts

Sub-total

US\$ 65,000

For the second till the fifth year of operation
an annual total of US Dollars 5,000 is allocated
for spare parts for heavy equipment and supplies
for experimenting and demonstrations (seeds,
seedlings, fertilizer, pesticides, beehives,
weaving material), office and photographic
supplies, simple tools and camping equipment

US\$ 20,000

Total Expendable Equipment in

US\$ 85,000

Appendix 10

Non-expendable Equipment
covered by UNDP Contribution (Figure 9, item 42)

1) For the first year (1983) of the implementation programme, the following equipment is needed:

| | | <u>Cost in US\$</u> |
|------------------------------|--|---------------------|
| two (2) | D6 Bulldozers + Rippers | 180,000 |
| one (1) | D4 Bulldozer + Ripper | 55,000 |
| one (1) | Traxcavator with multipurpose bucket (93l) and ripper | 85,000 |
| one (1) | Motorgrader (120 G) | 90,000 |
| one (1) | Water Tanker truck | 25,000 |
| two (2) | Tip Trucks (4 m ³ each) | 48,000 |
| one (1) | Cement mixer | 2,500 |
| one (1) | Mobile workshop with complete set of tools and grease pump | 26,000 |
| one (1) | Generator | 5,000 |
| four(4) | Airconditioners | 2,000 |
| one (1) | Photocopy machine | 5,000 |
| one (1) | Waterdrill | 6,000 |
| - | Hydrometeorological equipment | 5,000 |
| <hr/> Sub total (first year) | | <hr/> \$ 538,500 |

2. For the second year (1984) of the implementation programme the following equipment is needed:

| | | |
|-------------------------------|--------------------------|-----------------|
| one (1) | desk computer | 6,000 |
| two (2) | sprinkler irrigation set | 20,000 |
| | training equipment | 10,000 |
| | for stencil machine | 3,500 |
| | sheep foot roller | 8,000 |
| <hr/> Sub total (second year) | | <hr/> \$ 47,500 |

Cost in US\$

3. for the third, fourth and fifth year of the implementation period, an average US\$ 3,000 is needed for still unspecified equipment

| | |
|-----------|--------------|
| Sub total | .. \$ 9,000 |
| TOTAL | US\$ 595,000 |

Appendix 11

Abbreviations

| | |
|----------|---|
| CTA | Chief Technical Adviser |
| DLD | Department of Land Development |
| DO | District Officer (Nai Amphoe) |
| DOAE | Department of Agricultural Extension |
| DTEC | Department of Technical and Economic Cooperation |
| FAO | Food and Agriculture Organization of the UN |
| GTZ | German Agency for Technical Cooperation |
| MCP | Muban Contact Persons |
| MOAC | Ministry of Agriculture and Cooperatives |
| NEADC | North-East (regional) Agricultural Development Center |
| NEDOAE | North-East (regional) Department of Agricultural Extension |
| NERFD | North-East (regional) Royal Forest Department |
| POU | Project Operation Unit |
| RDC-PP | Rural Development Committee for Policy and Principles |
| RFD | Royal Forest Department |
| RID | Royal Irrigation Department |
| RTG | Royal Thai Government |
| RDTWM | Rural Development Through Watershed Management in the Nam Phong Basin |
| RDTWM-AC | Rural Development Through Watershed Management Advisory Committee |
| UNDP | United Nations Development Programme |
| US | Under-Secretary of MOAC |
| USAID | United States Agency for International Development |